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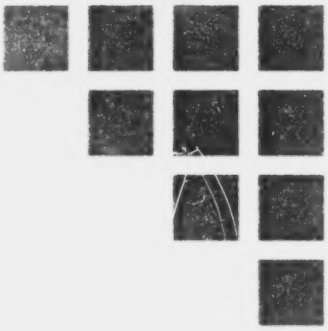
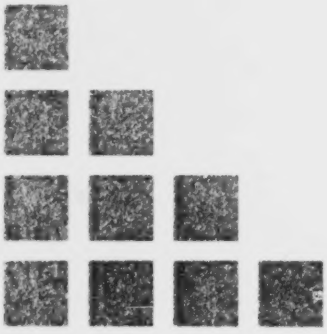


Class of '79 Project
Longitudinal Implications of School Entry Variability in Readiness

R-02-4E

by
Lorne Elkin
April 2002

Research Paper



Human Resources Development Canada
Développement des ressources humaines Canada

Canada

SP-496-05-02E

103-01466

Applied Research Branch
Strategic Policy
Human Resources Development Canada

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Printed Imprimé 2002
ISBN: 0-662-32190-1
Cat. No. N° de cat.: MP32-29/02-4E

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Abstract

The Class of '79 project is an ongoing longitudinal investigation of the academic and social implications of variability in school readiness at the age of school entry. Phases one and two, described in this document, compare the progress of four groups of students designated as low readiness, average readiness, variable readiness and high ready, as they moved through elementary and secondary school between 1979 and 1991. Subsequent follow-up of participants will be initiated at different times throughout adulthood. Performance differences between the readiness groups, as determined by traditional academic measures and scores on standardized achievement tests, persisted over twelve years of schooling. These results are examined with reference to the utilization of remedial services, characteristics of students and their families, social indicators of adjustment, student expectations about schooling and employment, and within the context of diverse theoretical perspectives.

Acknowledgements

Longitudinal investigation of any aspect of human development rarely has direct benefit to those who contribute to such studies. I am deeply indebted to the students, to their parents and to the school division for their participation and support. Without your collective cooperation the Class of '79 project wouldn't have happened.

Throughout phase I and II of the study I receive excellent cooperation from personnel at the division office and in each of the schools. Amongst my colleagues at the University of Regina I am especially indebted to John Fagan for his patience, guidance and time in preparing the data for analysis. Financial support from the university's President's Fund in 1989 helped defray some of the costs. Ann Bauman and Brenda McLeod made valuable contributions to the project through their respective honours thesis. Katharine Burgart gave up weekends and evenings to give form to the initial draft. Kathrine Storey prepared the final draft, fitting my project into her hectic schedule of working and completing a M.A. degree. Bob Stirling was very helpful when I needed to have the huge data file converted to an updated format and to rerun selected portions of the statistical analysis. Advice on selecting an appropriate source for publication was given by Meredith Cherland, Sonya Corbin Dwyer, Peter Hemingway, Bob Stirling and Dan Sydiaha. My sincere thanks to all of you.

Last but not least, I acknowledge the influence of Tufts University professor and author David Elkind. His concern about societal forces which hurry child development continues to be an important impetus in my decision to pursue the Class of '79 project.

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1. Introduction

The Class of '79 project, described in this report, is a longitudinal study of school readiness. The project has followed the development of 129 children since 1979, the year in which they entered Kindergarten. Phase One and Two of the research covered the years between 1979 and 1991. As we enter the new millennium, students of the Class of 1979 are now in their mid-twenties. Phase Three, yet to be initiated, will report on what has happened in their individual and collective lives since leaving high school. Assuming continued co-operation of participants, it is the intent of the researcher, now retired, to continue to monitor the changing lives and circumstances of this group of men and women, well into the next century.

School readiness, an often debated, enduring and multifarious topic, was given exclusive consideration in the April 1997 Special Issue of the journal *Psychology in the Schools*. Several prominent researchers, educators and well-known advocates of various perspectives on school readiness contributed to a comprehensive overview of research on a wide range of issues. In his introduction to the Special Edition, guest editor Gilbert Gredler suggested that the long-standing concern about school readiness, not only by educators, parents, and researchers but also at the highest level of government (National Education Goals Panel, 1992) seemed to be linked to an increased preoccupation with America's place in a highly competitive world economy. Accepting this premise, it might also be suggested that debate about which entrance age is best, and scrutiny of the connection between a child's development status and performance in school, is influenced by forces of competition, which permeate relationships and affect institutional practices within and between nations, most notably in technologically advanced societies. Similarly, the forces of globalization, as reflected in the merging of corporations and blurring of boundaries and differences between nations, contribute to a sense of competitive urgency in our families, our schools, and at our work places (Elkind, 1984, 1987, 1988; Schor, 1991; Shepard & Smith, 1988). Regardless of the underlying reasons for the resurgence of interest in school readiness as we move into the next century, it is apparent that the topic continues to stimulate considerable dialogue, not only amongst academics and educators but in the public press and, most certainly, in the deliberations of families.

Developmentalists, such as Glen Elder (1998), have advocated and actively engaged in longitudinal research as an essential tool to study in what ways the life course of individuals is influenced by historical events and the conditions of our individual and collective experience. From this perspective, a child's level of readiness for school can be regarded as a significant life transition, a precursor to subsequent development, initiating trajectories of accomplishment and heightened self-worth for some but also trajectories of failure and demoralization for others. Where and when children are born, together with conditions of early childhood, often expose them to circumstances and events which can affect their level of school readiness and the extent to which readiness influences later development. In fact, much of the literature on school readiness, as reflected in the lead article by May and Kundert in the 1997 Special Issue of *Psychology in the Schools*, has focused on children considered to be at risk for early school failures.

Many of the school readiness issues reviewed by May and Kundert (1997) have important implications for all children, regardless of their level of readiness for elementary school. For example, the way educators, researchers, and parents think about school readiness and the state of being at-risk, determines which children become the most likely candidates for assessment and intervention. As is well documented (Commission on Chapter 1, 1992; Love, Logue, Trudeau & Thayer, 1992; Reynolds, Besruczko, Mavrogenes, & Hagemann, 1996; Eads, 1990, Mantzicopolous & Morrison, 1990, Walsh, Ellwein, Eads, & Miller, 1991), it is the children from families with low socio-economic status, especially within disadvantaged minority groups, who are more likely to enter elementary school less ready for school and, therefore, at greater risk of being at-risk of failure. The inappropriate use of school readiness measures, together with limitations of such instruments, further compounds the problem by falsely identifying children as being at-risk and failing to identify children who are not developmentally ready to cope with the demands of entry level schooling (Meisels, 1989).

Prevailing concepts of school readiness and risk also influence what ultimately happens to children, whether correctly or incorrectly assessed, who become categorized as being at some point along a continuum of school readiness. If academic programs and remedial strategies are implemented within the parameters of an individual problem perspective, which predominantly defines readiness and risk as a characteristic of the child, the target for change is the child.

However, if a social constructivist perspective (Richardson, Casanova, Placier, & Guilfoyle, 1989) determines practice, greater emphasis will be placed on the influence of forces external to the child as targets for change.

As will be detailed later, there is a substantial body of literature which concludes that the various intervention strategies directed at children who have been identified as not developmentally ready for school, hence at-risk of future failure, have not proven to be effective, at least not in the longer term. Initial academic gains attributed to specific interventions have, with rare exception (Gredler, 1997a; McCarty, 1986) been found to dissipate over time. Equally important, contributors to research and commentary on readiness issues have suggested that such practices often have negative consequences for the delivery of educational programs to a broad cross-section of the student population, not just children at risk (Shepard and Smith, 1988; Ferguson, 1992, 1990).

Academic redshirting, the practice of delaying entry into Kindergarten even though a child meets the age requirements for admission, has become more common in America (Brent, May & Kundert 1996; Connell, 1987), especially amongst more affluent families (Bredekamp & Shepard, 1989; Grau, 1993) and, more commonly for boys than girls (Bredekamp & Shepard, 1989; May et al., 1994; Mergendoller, Bellismo & Horan, 1990). Some of the alleged negative implications of these trends in redshirting include inappropriate acceleration of academic demands in Kindergarten, which leads to even more children being unready for school; widening of the skill gap between children in Kindergarten, resulting in increased demand for pre-school programs, while at the same time withholding or delaying needed remedial services for students who are already academically disadvantaged (Ferguson and Strieb, 1996, Ferguson, 1992, 1990).

Meisels (1987) has argued that entry-level retentions, whether recommended or mandated, may be discriminatory and, as suggested by Grisson and Shepard (1989), potentially in violation of civil rights laws in the United States. Inhibiting equal access to educational services, whether traditional programs or special needs programs, is but one example of retention practices compromising a child's civil rights (Walsh, Ellwein, Eads, & Miller, 1991).

On the crucial question of whether delayed schooled entry reduces the risk of future failure for at-risk students, the empirical evidence is not encouraging. In fact, Grisson and Sheppard (1989) concluded that the opposite was true. At-risk students were more likely than other students to experience subsequent failure, despite delayed school entry. Furthermore, such students have higher dropout rates and are more frequently referred for special education services (May, Kundert, & Brent, 1995).

Developmental placement, often involving extra year programs, has been another common strategy to attempt to reduce the risk of failure for at-risk students. The extra year of schooling which these programs require typically occur in the early elementary grades, either as developmental kindergartens, pre-first or transition classes (Gredler, 1992; Shepard & Smith, 1989). Allowing at-risk students a maturation year before entering formal schooling has been one argument in favour of extra year programming. Providing an extra year for maturation has also been advocated for students who enter school, age qualified, but are judged to be developmentally unready to cope with academic demands in subsequent grades.

Attempts to assess the impact of extra-year transition placements for at-risk students has been a frequent topic of research in school readiness literature, especially in the last two decades. Comparing the academic performance of transition placed at-risk children with children who are judged to be equally unready but not placed has been a common research strategy (Ferguson, 1991; Matthews, 1996; Niklason, 1984; Sternberg, 1991). Although the primary target population has been students at risk, a number of studies (Ferguson & Strieb, 1996; Ferguson, 1991; Matthews, 1996) have included samples of students deemed to be developmentally ready for school. Many studies have employed longitudinal designs, however, very few studies have followed students from school entry through high school. Most studies have examined the impact of transition programs within the first few years of elementary school. Two notable exceptions, as documented by May and Kundert (1997), are the research of Matthews (1996) and Sternberg (1991). The time frame covered by these two studies, kindergarten through high school, is comparable to Phase One and Two of the Class of '79 Project described in this paper. Albeit dissimilar in some important aspects, the research of Matthews (1996) and Sternberg (1991) addresses issues of direct relevance to the Class of '79 Project. These issues and

a more detailed account of the extended longitudinal studies of Matthews and Sternberg will be discussed following a brief review of the findings of more time limited longitudinal studies.

Ferguson (1990, 1991, 1992) and, more recently, Ferguson and Strieb (1996) have reviewed a large number of published and unpublished studies of transition extra-year programs for children at risk of failure. The 1996 publication provided a follow-up, at the end of fourth grade, of Ferguson's own investigation of the effects of transitional placements for children who entered school in 1986 and 1987. His results supported the conclusions of most longitudinal studies (May & Kundert, 1997; Dennebaum & Kulberg, 1994; Meisels, 1992; Shepard & Smith, 1989; Shepard, 1989) which have examined the impact of extra-year programs in early elementary grades. At-risk students placed in transition, extra-year programs demonstrated initial gains in academic performance and social functioning but did no better than comparable at-risk students who did not participate in such programs. By the latter half of grade two, the performance of both placed and non-placed at-risk students declined relative to the performance of not at-risk students within the same school district. Performance comparisons at grade four essentially replicated the findings in grade two. Furthermore, even though placed students, as compared to non-placed at-risk students, were more frequently enrolled in remedial or special services (Ferguson & Strieb, 1996), neither the extra year of schooling nor remedial services made a significant difference in their academic performance and social functioning.

From preKindergarten through fourth grade, Ferguson and Strieb (1996) found negative age-achievement correlations in all at-risk samples, with males having a more negative age-achievement relationship than females over time. The widely held opinion that age, especially at school entry (Gredler, 1992; Miller, 1995; Hedges, 1977) and in early elementary grades (Friesen, 1984; Cosden & Zimmer, 1983) is positively related to school readiness and academic achievement, was contradicted by this result. Ferguson and Strieb (1996) recommended further research to examine the validity of their findings and to more fully investigate why an inverse age-achievement relationship might be found within at-risk populations. Citing the work of Skrtic (1991) and Swadener and Lubeck (1995), they suggested a wide range of potential contributing factors from specific attributes of at-risk populations to family and community influences.

Based on their review of the cumulative research, including their own longitudinal data, Ferguson and Strieb (1996) concluded that, virtually without exception, empirical support for the benefits of extra-year transition placements for at-risk students, was non-existent.

The longitudinal archival study of Matthews (1996), noted as one of the rare longitudinal studies to document the progress of at-risk students from school entry to the termination of high school, provided collaborative evidence for the conclusion of Ferguson and Strieb. As background to her doctoral research, Matthews (1996) reviewed 67 studies, most from non-refereed sources. Almost all of the studies examined the impact of extra-year programs within the first two years of schooling. Of the studies which included measures of academic achievement, including reading, math and general achievement, Matthews found strongest support for the conclusion that developmentally placed at-risk students fared no better academically than comparable at-risk populations who did not participate in extra-year programs. The next most frequent finding was that those who qualified for extra-year programs, but did not participate, performed better than those who qualified and participated. According to Matthews (1996), the studies which examined social and emotional outcomes, as contrasted with academic measures, revealed similar findings. Participants in extra-year programs fared no better and sometimes worse than equally at-risk students who did not participate.

As documented in Matthew's (1996) review of the literature and corroborated by other reviews (May & Kundert, 1997; Ferguson, 1992) a significant number of studies have examined the influence of developmental placement programs on future retentions, referral to and participation in special education, and drop-out rates. According to May and Kundert (1997) the research on retention rates has generated mixed results, ranging from lower rates of retention for at-risk developmentally placed students, to higher rates of subsequent retention for such students. Results regarding special education placements have been less equivocal. Developmentally placed at-risk students have significantly higher rates of referral to and participation in special education programs (May & Kundert, 1997). Similar results have been found for drop out rates, as reported in the literature reviews of May and Kundert (1997), Matthews (1996), and Ferguson and Strieb (1996).

Commenting on the consistently higher rates of special education placements for extra-year transition students, Matthews (1996) suggested higher rates of handicapping conditions amongst at-risk

populations might account for these results. Although this explanation can account for some of the variance in special education placements, it does not explain why similar results have been found in many studies which have controlled for known disabilities. Ferguson (1992) has argued that placement in extra-year readiness programs initiate actions and responses to students, including higher referral rates to special services, which often negatively impact not only transition program students, but the delivery of educational services to all students.

As indicated by the available reviews of both published and unpublished studies of transition extra-year programs for at-risk students, empirical evidence in support of the benefits of such programs is extremely limited. Despite the overwhelming consensus that extra-year programs have not benefited at-risk students and have, in fact, compounded academic difficulties experienced by many students, May and Kundert (1997) caution that the quality of intervention strategies for retained students has only rarely been considered a crucial determinant of outcomes (Leinhardt, 1980). Anecdotal, testimonial and theoretical support for extra-year programs, which Ferguson and Streib (1996) attribute to the persistence of extra-year placements in many school jurisdictions, could be a source of information about programs which, in fact, have made a positive difference for some extra-year students. Similarly, having a more thorough accounting of the specifics of extra-year programs which have either failed to demonstrate any significant benefits, or contributed only to temporary gains in academic and social performance, or have negatively impacted on the performance of at-risk students, might also be informative in explaining why the vast majority of empirical studies have failed to provide evidence in support of the practice.

A recent report on the Chicago Longitudinal Study (Reynolds & Temple, 1998), a study of the impact of early childhood intervention for low income, inner-city African American children, underlines the importance of carefully scrutinizing the details of intervention programs, including the duration of programs and extending follow-up assessment over many years. The impact of preschool and Kindergarten only intervention and intervention extended through grades two and three was compared at grade three and again in grade seven. Employing measures of reading achievement, mathematics achievement, grade retention, and special education placement, the authors concluded that the "findings provide rare longitudinal evidence of the beneficial effects of a large-scale community-based program of

extended early childhood intervention" (p. 231). The rationale for describing these findings from the Chicago Longitudinal Study is not to equate early childhood intervention programs with extra-year programs, but simply to emphasize the merits of extended longitudinal designs and closer examination of the specifics of intervention strategies when assessing programs.

As previously noted, the Class of '79 Project is one of the relatively rare studies on any aspect of school readiness which has followed the progress of children from the time of school entry through high school. The proposed follow-up into adulthood has the potential of providing even rarer longitudinal data on school readiness issues. Prior to elaborating on the details of the Class of '79 research, a more complete account will be given of the extended longitudinal studies of Sternberg (1991) and Matthews (1996), which were undertaken as doctoral research.

The Sternberg (1991) study, carried out in a suburban middle-to-upper class community on Long Island, New York, examined the impact of a two-year transitional program following Kindergarten, for students deemed to be at-risk of failure in subsequent grades, as perceived by their Kindergarten teacher. Using cumulative information on student files, the performance of at-risk students who participated in the program and at-risk students who were offered the program but did not participate because of parent objection, was compared from Kindergarten through grade twelve. Following the two-year transitional program, students were either moved back into the conventional grade three program, retained in a conventional grade two program, or referred for special education services either in a self-contained setting or conventional class placement with a resource room component. Students with known gross neurological involvement, limited intellectual potential or multiple handicaps were excluded from the study.

The two-year early intervention transition program placed students into smaller classes, emphasized learning-to-learn skills and modified the curriculum to meet the needs of students deemed to be developmentally delayed. A detailed description of the program is contained in the dissertation (Sternberg, 1991).

Summarizing the cumulative academic data, including reading and mathematics scores on standardized tests at the end of grades 3, 4, 5, 6, 7, 8 and 9, writing scores on a standardized test and aptitude

testing in grade 8, grade-point averages at the end of high school, and graduation rates. Sternberg concluded:

> Youngsters who did not participate in the transition class had higher scores on standardized tests in mathematics and reading and better outcomes on other academically-related criteria on the elementary and secondary levels (p. 165).

Non-participating students not only did better academically but were also less frequently retained, less frequently placed in special education programs, and more frequently tracked into higher levels in junior high school, than students who participated in the two-year transition program. At-risk students in the conventional program had lower drop out rates and higher graduation rates. Of those students who graduated from high school, more students in the non-participatory group had college aspirations and subsequently applied to colleges.

Sternberg (1991) concluded that at-risk students would have fared better by remaining in the conventional program and suggested a number of factors which could have contributed to their poorer performance. Available evidence, although not definitive, suggested that reduced academically based contact time in the transition program was a contributing factor. Other factors potentially favouring performance in the conventional program included more academically-oriented models in grades one and two, higher teacher expectations, and parents with both higher expectations and greater involvement in the child's school work (Sternberg, 1991).

Although the transition program research reviewed by Sternberg, including the work of McDaid (1950), Matthews (1977), Talmadge (1981), Gredler (1984), Shepard and Smith (1985) and Baenen and Hopkins (1989), covered programs with unique characteristics, varying in content, delivery and or duration, the results were unequivocal. Transitional programs, as compared to conventional academic programs, had not significantly improved the performance of at-risk students. Sternberg's twelve year follow-up of the Long Island transition program reached the same conclusion.

The extended longitudinal study of Matthews (1996), which also followed the academic progress of students from Kindergarten through high school, focused on group differences between students who had experienced different grade placement histories in the first two years of schooling. Similar to Sternberg's (1991) study, Matthews included a comparison between developmentally delayed at-risk

students, who received transitional programming (either pre- Kindergarten or pre-first grade) with a comparable group of children who qualified for such programs but remained in the conventional program. The latter group was designated as IBNP, Identified But Not Placed. Matthews, like Sternberg, also utilized archival data from students' cumulative files, but differed from Sternberg by including a comparison group of not-at-risk peers, that is, children deemed to be developmentally ready for Kindergarten and grade one. These children were matched by gender and quartile age with children in the pre-Kindergarten and pre-first grade groups.

Participants in the Matthews (1996) study attended school in a suburban school district, described as middle class, in Mid-Hudson Valley, New York. School readiness in the district was assessed using the Gesell Preschool Test, together with information obtained in parent interviews, in the spring prior to a student's Kindergarten year.

The stated purpose of the study was to examine short and long-term outcomes of developmental Kindergarten and pre-first grade placement on academic achievement and school adjustment (Matthews, 1996). As in the Sternberg (1991) study, performance was assessed from Kindergarten through grade twelve. Group differences were assessed on group-administered standardized cognitive ability test scores; teacher-assigned grades; group-administered standardized achievement test scores; New York State Regents Examination scores; New York State competency examination scores; grade point average and class rank; rates of absenteeism; and rates of special education placement and type of placement. Results from this doctoral research have been reported in a recent publication (Matthews, May & Kundert, 1999).

The developmental Kindergarten offered smaller class size (limited to 18), a teacher aide in addition to classroom teacher, slower paced instruction, and hands-on experiences for the child who is developmentally immature. Following completion of the developmental Kindergarten, children entered the regular Kindergarten program and then first grade.

Pre-first classes were designed for students who are six years old chronologically, but who test at the 5.5 developmental level. Similar to the developmental Kindergarten, pre-first classes are small in size,

provide a teacher aide and emphasize social and language development, reading readiness, and hands-on math activities.

To attempt to control for any differences between the four groups attributable to aptitude, rather than developmental placement, scores on a group measure of aptitude (CTB/McGraw-Hill, 1983), which had been administered in grade four, were analyzed. Students in the Matched Peers and IBNP groups scored significantly higher than students in the two developmentally placed groups. As a result, Matthews (1996) used multivariate analysis of covariance (MANCOVA) to adjust for aptitude differences when making comparisons.

With aptitude differences controlled, no substantive differences were found between the groups on any of the measures of academic achievement either in elementary or secondary school. On measures of social adjustment, as reflected in attendance records and social development ratings, the outcome was similar. However, the at-risk students in the two developmentally placed groups, had significantly higher drop out rates and were more frequently placed in special education programs. On measures of retention, students in the IBNP group were more frequently retained (Matthews, May & Kundert, 1999).

In summary, Matthews concluded that the overwhelming majority of results indicated that these particular developmental programs had not proven advantageous to at-risk students, either in the short-term or long-term. These findings, according to Matthews (1996), replicated the results of more time limited studies of developmental placement (Dennebaum & Kulberg, 1994; Mantzicopoulos & Morrison, 1992; Porwancher & DeLisi, 1993; Shepard & Smith, 1985), typically focusing on academic progress in the early elementary grades. Of special significance to the Class of '79 Project, Matthews' results essentially mirrored the conclusions of Sternberg's (1991) extended longitudinal research in another community in the state of New York. However, in contrast to Matthews, Sternberg found that students who qualified for transition programming, but who did not participate, had lower rates of retention than placed students.

Commenting on the higher rate of retention in the IBNP group, Matthews (1996) reported that one-half of these retentions occurred in Kindergarten and suggested that early screening using the Gesell

Preschool Test might have been inaccurate. Another explanation given was the possibility of teacher bias toward students who did not follow through on earlier recommendations for developmental placement. A third explanation suggested that parents or teachers of developmentally placed students might be reluctant to retain students who already had been retained, either in pre-Kindergarten or pre-grade one.

Another possibility, not mentioned by Matthews, could be related to the younger age of IBNP students. The reported finding that no significant differences in age existed between the four groups was based on an analysis when the average age of students in the four groups was seventeen. At this particular age, students in the IBNP group were between six and seven months younger, on average, than students in the other groups (Matthews, 1996, p. 114). If age differences had been compared at age five, a difference of six to seven months, if substantiated, would be significant. Given the younger average age of students in the IBNP group, it would not be unexpected to find lower scores on the Gesell Preschool Test and parents reporting immaturity as regards to school readiness. Also, the higher rate of Kindergarten retentions for the younger IBNP students, as reported by Matthews (1996), would not be unexpected.

Comparing the results of research on early elementary school retention (Holmes & Matthews, 1984) and developmental placement, Matthews (1996) suggested that, except in rare circumstances, neither practice has proven successful in improving the academic performance of children assessed as being at-risk. Furthermore, she concluded, such practices are not only ineffective but also add to the cost of providing educational services (May & Kundert, 1992). In an age of increased pressures to demonstrate financial accountability (Dyer & Binkney, 1995; Ferguson, 1992) where cost cutting has once again become a major preoccupation of educational institutions, Matthews' conclusions about the ineffectiveness and added costs of developmental placements and retentions need to be addressed. The extended longitudinal data of Sternberg (1991) and Matthews (1996), which corroborated the findings of a larger number of more time-limited studies, underlines the necessity of determining why transitional, extra-year and retention programs for at-risk students, have been found to be ineffective in the majority of empirical investigations (Matthews, May & Kundert, 1999).

Addressing the limitations of her study, Matthews raised the important and unresolved issue of distinguishing between aptitude, intelligence, and achievement. As previously noted, Matthews controlled for differences in aptitude for school success, as determined by scores on a test for cognitive skills (CTB/McGraw-Hill, 1983), administered in grade four. For the purpose of her research controlling for aptitude differences was deemed essential to the primary objective of assessing the impact of pre-Kindergarten and pre-first year grade on later achievement. Referring to the authority of Keppel and Zekek (1989), Matthews stated, "when conducting a study examining group differences it is essential to first establish that the groups were equivalent at the start of the study in order to assure a more statistically powerful analysis" (p. 132). Given the latter assertion, it would seem pertinent to question whether aptitude, assessed in grade four, would be equivalent to aptitude assessed at the time of school entry. In the years between Kindergarten and grade four children would have been subjected to a myriad of influences which could affect performance on an aptitude test. Aptitude scores in grade four, for example, could be influenced by a child's history of success and or failure in earlier grades. Such influences can be especially important for children who enter Kindergarten at a lower level of school readiness than expected by both their teachers and the requirements of the curriculum (Ferguson, 1990; Shepard & Smith, 1988). Had Matthews been able to control for aptitude at the time of school entry, the potential interactive impact of experience and aptitude would at least have been limited, for the purpose of control, to pre-school influences.

Despite reaching the conclusion that neither retention nor developmental placement have proven successful in improving the academic performances of at-risk children, Matthews (1996) and Matthews, May & Kundert (1999) advocated for persistence by educators and researchers to learn how and under what circumstances children at risk can acquire the skills necessary for higher levels of academic achievement. With reference to Angoff (1988), Matthews (1996) suggested, "even aptitude is subject to change if the environmental conditions are right" (p. 145). For May and Kundert (1997), the search for effective alternatives to school readiness practices which have failed to improve the academic performance and social functioning of at-risk students, is a question of rights. From this perspective, the right of children to receive appropriate public education is placed in jeopardy when school districts persist in maintaining programs which have proven to be ineffective (Ferguson, 1992; Grisson & Shepard, 1989; House, 1989; May, Kundert, Nikoloff, Welch, Garrett & Brent, 1994).

The Class of '79 Project was initiated prior to many of the studies and publications referred to in this introduction. An underlying issue which connects this diverse body of literature to the Class of '79 Project is the significance of school readiness variability for the lives of children and ultimately, for the broader community. Although school readiness, as a concept, is applicable to all children, the dominant emphasis in readiness research, debate, and education programming has been directed at children deemed to be at-risk of failure. Despite general acceptance of the observation that school readiness is highly variable at the age of school entry, research on the long-term implications of these initial differences, across the spectrum of differences, has been limited.

Within educational and academic circles there is a diversity of opinion, influenced by schools of practice, theoretical orientation, experience and shifting institutional priorities, regarding the long-term implications of school readiness variability at the time children enter school (Ferguson, 1992; May & Kundert, 1997). Similarly, parents have beliefs and opinions about such issues (Galper, Wigfield, & Seefeldt, 1997; Sigel, McGillicuddy-Delisi, & Goodnow, 1992) which influence their aspirations and expectations, not only for their children, but for other children in the community. As a generalization, it would seem accurate to conclude that a broad cross section of the population in North America and in countries throughout the world, have opinions about school readiness. In short, school readiness is not an esoteric topic, of little interest to most people. Nevertheless, despite the apparent pervasiveness of beliefs about the relationship between school readiness and success or failure, there is a paucity of empirical data regarding the long-term implications of school readiness variability. Although it is understandable that at-risk students have been the primary target of readiness research, debate, and intervention, too little is known about the comparative longitudinal implications for children who enter school at different levels of readiness, across the spectrum of school readiness.

The long-term implications of variability in school readiness has relevance for all students, not only those deemed to be at-risk. Do children who enter elementary school at an advanced level of readiness maintain the advantage throughout their lives? What about the majority of students, those who enter school within the "normative" range of school readiness, neither at-risk nor at an advanced stage of readiness? Do these students maintain their relative status, barring exceptional circumstances, throughout the life course? In short, is school readiness predictive of trajectories of development, of success and

failure, as children move from childhood through adulthood and into old age? Or, is school readiness simply a highly variable characteristic of children at the age of school entry which is largely unpredictive of a child's future, either as student, worker, or citizen?

If Elkind (1988, 1987, 1984) and others (Cunningham, 1988; Ferguson, 1992; Meisels, 1987, NAEYC, 1986; Shepard & Smith, 1988; Friesen, 1984; Winn, 1983) are correct in the observation that young children in North America and elsewhere, face an escalation of academic expectations and demands in early elementary grades, finding empirical answers to the long-term consequences of school readiness variability could have important implications. If, for example, school entry unreadiness, has long-term or possibly life-long negative consequences for children, the ramifications of placing even greater numbers of students at-risk, as a result of escalating academic demand or institutional speed-up, could be profound. Under such circumstances, for example, the goal of having all children in America start school ready to learn by the year 2000 (National Education Goals Panel, 1992), however laudable as an objective, was unachievable.

1.1 Goal of The Class of '79 Project

The primary goal of the Class of '79 Project was to undertake a longitudinal investigation of the consequences and implications of variability in school readiness at the age children enter school. Children across the spectrum of readiness, as assessed in Kindergarten, were to be compared on a wide range of variables as they moved through elementary school, secondary school, and into adulthood. The agenda was to record the trajectory of each child's development through archival data, as recorded in school records, through on-going examination of various indicators of change and through periodic interviews with participants.

2. Methodology

Initially, a priority of the project was to locate a school division which routinely assessed school readiness in Kindergarten employing standardized tests and procedures. In essence, the intent was to compare the progress of children within an educational setting where assessment of school readiness was instituted practice, a component of educational programming within the school division. Rather than target particular categories of school readiness or particular programs directed to particular students, the objective was to document the progress of all students as they moved through the regular curriculum, special programs and other services offered by all schools within the division, from Kindergarten through high school.

In time, a school division in a small city of Western Canada was located which met the requirement of routine assessment of school readiness during the Kindergarten year, using a standardized test and consistent assessment procedures. Negotiations with the division's director and other senior personnel, followed by a presentation to the elected school board, led to approval in principle. Acceptance by the division's administrators and policy makers cleared the way for the crucial step of corresponding with the parents of all students who qualified for the project and securing written consent to allow the researcher access to the student's cumulative files and to the students themselves.

2.1 Assessment of School Readiness

For a number of years all children enrolled in Kindergarten within the school division were assessed on the Metropolitan Readiness Test (Nurss & McGauvran, 1976) at two different times during the school year. Students were assessed on Level I, form P of the MRT in January and February, and Level II, form P in May and June of their Kindergarten year, which began in late August or early September and ended in late June. The rationale for routine administration of the MRT, as described in a memorandum to Kindergarten teachers and school principals (Interoffice memo, 1982), was to provide information used in instruction and programming, designing materials and activities and determining needs within the division. More specifically, results from the MRT were used to determine the strengths and weaknesses of individual students for enrichment and remediation, and as a screening tool for further testing. Information contained in interoffice memorandum (1983) indicated results from division-wide

administration of the MRT Form P, level II were compiled for each school (N = 8) and used to provide a profile of school readiness within the division.

As reported by Zenka and Keatley (1985), the Tulsa, Oklahoma school system also administered the MRT to all Kindergarten children in the spring of the school year. Division-wide administration of school readiness tests, in fact, has been and continues to be common practice in schools throughout North America (May & Kundert, 1992; Meisels, 1987).

Bieger's (1985) review of the 1976 edition of the MRT, the instrument used to assess students in the school division from which the Class of '79 population was drawn, described the test as being a valid and reliable measure of school readiness, intended for Kindergarten and early first grade pupils. The purpose of the assessment is not to determine whether a child is ready or not, but to determine the level of instruction for which a child is ready. According to the data analyzed by Bieger (1985), the predictive validity of the MRT is high, especially when the Battery Composite and Pre-Reading Skills Composite scores are used, and if the skills emphasized in the school program are consistent with the skills assessed by the test. Ravitch's (1985) review of the 1976 edition as reported in the 10th Edition of the Mental Measurement yearbook concluded:

> The Metropolitan Readiness Tests should continue to retain a place amongst the most widely used batteries for assessment of school readiness. Users familiar with previous versions will find the same quality in the tests and in the accompanying manuals. The statistical information provided with the test is appropriate and informative, and speaks to the quality of the instrument (p. 970).

Both Beiger (1985) and Ravitch (1985) emphasized that the authors of the MRT, Nurss and McGauvran (1976) urged caution in interpreting the results. As stated in the teacher's manual which accompanies the 1976 version of the test:

> Teachers are encouraged to view the tests as but one source of information about pupils. While the test results have considerable value, they should be viewed as tentative until substantiated by additional information about each pupil's level of skill development. This is especially true because young children undergo rapid growth of their pre-reading skills (p. 14).
>
> Avoid any initial temptation to label pupils or to pigeonhole them as "fast," "slow," or "average." First impressions can often be misleading, and standardized test results are subject to some degree of error. Use the test results as a basis for gathering additional information about individual pupils as well as for the class as a whole (p. 14).

> Since the MRT is often the first standardized group test that pupils take in school, it is important that teachers not give undue emphasis to the test results and perhaps convey to parents the erroneous impression that the child's future educational career is determined by the MRT scores (pp. 18-19).

The cautionary directives of Nurss and McGauvran (1976), although specific to the MRT, call attention to some of the concerns more recently raised by Meisels (1987) regarding the inappropriate use and misuse of both school readiness tests and developmental screening procedures by schools and school divisions throughout North America. Shepard and Smith (1988) acknowledged that the MRT is one of the better constructed school readiness tests, concluding it has acceptable validity when used to guide instruction in regular classrooms. On the other hand, they suggested the MRT will misidentify a significant percentage (33%) of children if used to make special placement decisions. From this perspective, the degree of error deemed to be acceptable for school readiness measures, such as the MRT, is determined by the purpose and use of the instrument.

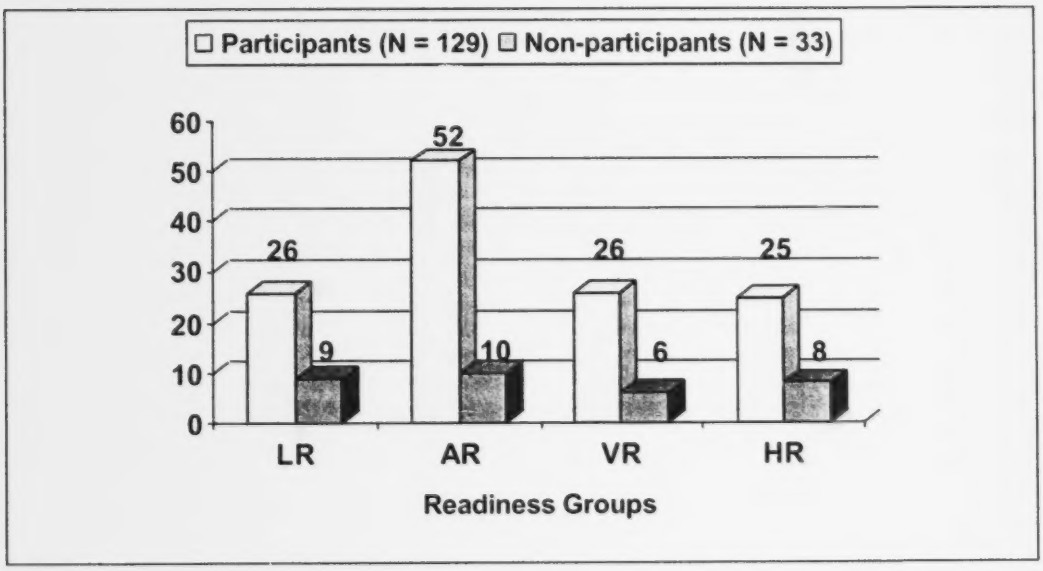
To qualify for the Class of '79 project, participants had to meet two requirements. First, students had to have entered Kindergarten within the designated school division in 1979 and remain enrolled in the division in 1988. Second, participants had to have completed all subscales of the MRT Level II, Form P in the spring of 1980. Of the 351 children who entered Kindergarten within the division in 1979, 162 met the selection criteria. The main reason for students failing to qualify for participation in the project was movement out of the district. One hundred and sixty-four students (46.7%) were no longer enrolled in schools under the division's jurisdiction in 1988. Another 24 children had incomplete test results on one or more of the MRT II subscales because of absence from school on a test day. One child failed to complete any of the MRT II subscales.

Of the potential sample of 162 students who met the selection criteria, 129 students (79.6%) agreed, with the consent of their parents, to take part in the research. Thirty-three students either failed to return the request form or returned the form clearly indicating their decision to not participate. Neither the names of the students nor their reasons for non-participation were known to the researcher.

To investigate the longitudinal implications of variability in school readiness, participants in the Class of '79 project were assigned to one of four readiness groups based on pre-reading composite scores on

Level II From P of the MRT, as assessed in May and June of 1980. Students scoring in the 1 to 3 stanine range were assigned to a group designated as low readiness (LR). Those who scored in the 4 to 6 stanine range were categorized as average readiness (AR) and those scoring in the 7-9 stanine range as high readiness (HR). Students with highly variable scores on the MRT, operationally defined as recording subscale scores which varied by four or more stanine, were assigned to a variable readiness (VR) group. The distribution of students across the readiness categories, for both participants and non-participants, is shown in Figure 1. Chi square analysis indicated that the distribution of non-participating students across the readiness groups was not significantly different (χ^2 (3, N =162) = 1.53, p = .65) than the distribution of participants.

Figure 1 **Distribution of School Readiness in Kindergarten as Determined by Pre-reading Composite Scores on Level II Form P of the Metropolitan Readiness Test**



Assignment to the readiness groups was premised on the assumption that the pre-reading composite scores recorded for each student were valid and reliable indicators of school readiness at the time of assessment. Given the fact that phase one of the project, covering the period from 1979 to 1988, was based largely on archival data, information recorded in students' cumulative files, any attempt to verify the accuracy of the MRT scores was limited to information contained in the files.

One source of information, albeit imperfect, to attempt to verify the accuracy of the MRT Level II assessments were reports found in students' cumulative files. Although practice varied between schools and within schools, the cumulative files of many students contained reading and academic progress reports which described the performance of students at various times throughout the elementary grades. Psychological reports were filed for students who had been referred for assessment. Some files had very few reports while others contained a large number of documents including reading, academic, and psychological reports. The latter three sources of information were carefully scrutinized for the school year immediately following the MRT II assessments, which was grade one for most students. The objective was to determine whether information in the reports was either consistent or inconsistent with the pre-reading composite scores recorded on Level II Form P of the MRT.

An important limitation of this approach to attempt to verify the accuracy of the MRT assessments was the time frame covered by the analysis. Given the fact that school readiness reflects a stage of development which is variable and modifiable, neither change nor absence of change in readiness from one time to another, especially over the course of twelve months, necessarily demonstrates either confirmation or negation of the accuracy of the original MRT assessment. For example, over the period of a year, a child's readiness for schooling could change significantly under the influence of maturation, effective teaching, and positive changes in the child's home, school, and social environment. Conversely, maintenance of a child's readiness status over time could be influenced by personal factors and or external influences mitigating against change.

A further limitation of filed reports as a source of information to substantiate or question the accuracy of the MRT assessments was the incompleteness of the data. Although the cumulative files contained a wealth of information about each student, the files of many students did not contain either reading, academic, or psychological reports within the designated twelve month comparison period.

Another source of potential comparative data, recorded in the files of most students, was the Gates-MacGinitie Reading Test: Primary A Form 2. The test was routinely administered to students within the school division at the end of grade one. As with the filed reports, a limitation of the Gates-MacGinitie comparison with the MRT II data was the difference in the time of assessment, end of grade one as compared to end of Kindergarten, and to a lesser extent, the incompleteness of the data.

2.2 Verification of MRT II Assessments

Consistency between information in filed reports and pre-reading composite scores on the MRT II was far more frequent than evidence of inconsistency (Table 1). As previously noted, however, the files of a large percentage of students did not contain any reports for comparison with the MRT data.

Table 1 **Consistency Between Level II Form P MRT Pre-reading Composite Scores and Information in Reading, Academic and Psychological Reports for the Total Sample (N=129)**

Reports	Consistent	Inconsistent	No Report
Reading	62	11	56
Academic	35	5	89
Psychological	21	5	103

The most frequent reports and strongest evidence of consistency was found in the LR group (Table 2). Although the cumulative files of students in the other three readiness groups contained far fewer reports within the designated time frame, where reports were filed consistency between the reports and MRT assessments was much more frequent than any indication of inconsistency. The relatively few inconsistencies noted in the total sample were distributed across all four readiness groups.

Table 2 **Consistency Between Level II Form P MRT Pre-reading Composite Scores and Information in Reading, Academic, and Psychological Reports for Each Readiness Group**

Group	Reports	Consistent	Inconsistent	No Record
LR(N=26)	Reading	20	0	6
	Academic	17	0	9
	Psychological	15	3	8
AR(N=52)	Reading	21	7	24
	Academic	8	2	42
	Psychological	3	2	47
VR(N=26)	Reading	12	2	12
	Academic	4	2	20
	Psychological	2	0	24
HR(N=25)	Reading	8	2	15
	Academic	6	1	18
	Psychological	1	0	24

Analysis of variance (ANOVA) of grade equivalent scores on the vocabulary and comprehension scales of the Gates-MacGinitie Reading Test: Primary A Form 2 revealed significant differences between the four readiness groups. Mean differences on the vocabulary scale ($F(3,96) = 15.93$, $p < .000$) and the comprehension scale ($F(3,95) = 15.74$, $p < .000$) were highly significant. Low readiness students

received the lowest scores and HR students the highest scores (Table 3). Results on the Gates-MacGinitie were consistent with group differences on the pre-reading composite scale of the MRT II.

Table 3 **Grade Equivalent Scores on the Vocabulary and Comprehension Scales of the Gates-MacGinitie Reading Test: Primary A Form 2**

Scales	Vocabulary			Comprehension		
	Mean	*SD*	*N*	*Mean*	*SD*	*N*
LR	1.88	56	19	1.74	51	19
AR	2.81	58	42	2.68	65	42
VR	2.59	74	22	2.54	75	21
HR	3.14	34	17	3.14	59	17

While acknowledging the limitations of available reading, academic, and psychological reports and scores on the Gates-MacGinitie Reading Test as a means of verifying the accuracy of the MRT II assessments, neither source of comparative data provided substantive evidence of inconsistency. For the majority of students for whom comparative data was available, the results were judged to be consistent with pre-reading composite scores on the MRT. Inconsistencies were noted, however, these were infrequent. Because of the limitations in this archival approach to verifying the MRT II assessments, definitive proof of the accuracy of each individual assessment cannot be given. Nevertheless, the available evidence gives support to the supposition that scores recorded on the MRT II, by and large, seemed to accurately represent the readiness status of the participants, at the time of assessment. What can be said with certainty is that the results of the MRT assessments were recorded in each student's cumulative file and compiled to provide statistical profiles of the readiness status of students within this particular school division. Performance on the MRT, together with information provided by teachers, parents, and resource personnel, was used in making referrals for individual assessment, was used in programming, and was used in placement decisions. As such, MRT assessments were an integral component of academic practice. Within this context, assigning students to readiness groups based on MRT II pre-reading composite scores for the purpose of examining the longitudinal implications of readiness variability was deemed appropriate.

2.3 Time and Place of the Class of '79 Project

During the time of Phase One and Two of the project, from September 1979 to the end of June, 1991, the school division directed educational services for nine elementary schools, three high schools and a facility for high school students with special academic needs. The prevailing philosophy was to provide

educational services to all students within the least restrictive environment, integrating students into mainstream structures and programming while accommodating individual differences and exceptionalities. For students experiencing significant academic difficulty during the early elementary grades, the policy of the school division was to recommend extending Division I placement, Kindergarten through grade three, for an additional year. Recommendations to delay a child's advancement into Division II, grades four through six, were made after consultations with teachers, resource personnel, parents and school administrators. Typically, children who experienced difficulty coping with the Division I curriculum would have been referred for individual assessment and, if deemed appropriate, placed in remedial programs supplementary to the regular program.

The school division supported a range of special services intended to accommodate individual differences in development and academic performance. For example, school-based resource programs, available both on a short-term and long-term basis, provided supplementary instruction in basic academic subjects and other remedial services. Students with learning difficulties, particularly in Language Arts and or Mathematics, could qualify for either small group or one-on-one instruction for designated times each week, while remaining in the conventional program. In addition to the resource programs, special education services were provided through several other programs, including the Learning Assistance Program, Resource Room for the Hearing Impaired, Preschool for Hearing Impaired Children, English as a Second Language, Program for Optimum Development, School Community Life Skills Program, Work Education Program, Modified Programs and services provided by the Speech, Language and Hearing Department. Special programming supplementary to the established curriculum was also available for high achieving students.

The educational programs provided by the public school division serve a small city in Western Canada. Historically, the economy of this largely working and middle class community has been tied to agriculture, including production, processing, and transportation, and to facilities and institutions operated by the provincial and federal government.

Phase One of the project, which spanned the years from Kindergarten entry in September of 1979 to the end of the school year in June of 1988, was largely based on archival data recorded in student's

cumulative files and information obtained from students in interviews undertaken in May and June of 1988, when most participating students were completing grade eight.

Phase Two, which covered the time from the completion of Phase One in 1988 to the completion of the school year in 1991, included archival data from students' cumulative files and data from interviews conducted with each student in May and June of 1991. For the majority of students, the end of the 1990-1991 school year was grade eleven, one year prior to graduation from the four year high school program.

Information about educational programs and specific data about class sizes and frequency of split-grades as compared to single grades was provided by the school division.

The cumulative files of students contained substantive data not only about academic performance as assessed by traditional measures, such as grades and gradepoint averages, but also detailed information about performance on an array of standardized tests, referrals to and participation in special programs, reports from resource personnel, and biographical information about students and their families. The approach taken by the researcher was to record all available information in the files, to quantify whatever could be quantified and to compare the four designated readiness groups on as many dependent variables as possible, accepting the limitations of unequal and variable Ns. For some variables, it was necessary to assign a specific value or code based on the researcher's assessment of the evidence without any additional substantiation. Given the confidentiality of the data, only the researcher had been granted access to the files.

The primary focus of student interviews, both in 1988 and 1991, was about schooling. Participants were asked about various aspects of their school experience, about their attitudes toward school, about their involvement in extra-curricular activities, about sources of academic support, and about their aspirations and expectations about future schooling and employment. As an introduction to each interview, biographical information about students and their families was substantiated and updated. For Phase One of the study biographical information, such as parents' marital status, employment status and occupational status was confirmed in the 1988 interviews with students. Biographical information in Phase Two was provided by students during the interviews in May and June of 1991. At the close of interviews, participants were asked to complete a measure of self-esteem.

In the statistical analysis, separate variance estimates were used when p values of F were less than 0.10. Whenever the 2-tailed probability of the F value was greater than 0.10, pooled variance estimates were used.

2.4 Characteristics of Participants and Their Families

2.4.1 Age of School Entry

The mean age at school entry for children in the Class of '79 Project was 61.72 months, with a range between 54 and 70 months. One way analysis of variance indicated that the difference in age between the four readiness groups was significant (F (3,125) = 2.64, $p < .02$). Participants in the LR group were the youngest, HR children the oldest (Table 4).

Table 4 **Age of Participants at the Time of Enrolment in Kindergarten**

Readiness Group	Age (Months)		
	Mean	*SD*	*N*
LR	60.23	3.64	26
AR	61.54	3.71	52
VR	61.89	3.94	26
HR	63.48	3.45	25

2.4.2 Gender

Within the total sample there were 64 females and 65 males. Males outnumbered females in the LR and HR groups and females outnumbered males amongst AR participants (Table 5). However, the difference across the four readiness groups was not statistically significant (χ^2 (3, N =129) = 2.97, $p > .40$).

Table 5 **Gender of Participants**

Gender	Readiness Group (N's)			
	LR	*AR*	*VR*	*HR*
Male	16	22	13	14
Female	10	30	13	11

2.4.3 Marital Status of Participants' Parents

Chi square analysis failed to find any significant difference in the marital status of the parents of participants across the readiness groups (χ (12, N = 129) = 12.97, $p > .37$). Eighty-six percent of the participants were living with parents who were either married (80.6%) or remarried (5.4%).

Approximately one of nine students (11.6%) were living in family situations, in 1988, involving divorce or separation (Table 6).

Table 6 **Marital Status of Participants' Parents**

Marital Status	Readiness Group (Ns)			
	LR	*AR*	*VR*	*HR*
Single	1			
Married	18	45	20	21
Divorced-Separated	5	6	2	2
Widowed			1	1
Remarried	2	1	3	1

2.4.4 Numbers of Children in the Family

Including participants, the mean number of children in the family was 2.66. The difference across the readiness groups was statistically significant (F (3,125) = 2.64, $p < .05$) with students in the LR group, on average, having more brothers and sisters (Table 7).

Table 7 **Number of Children in the Family**

Readiness Group	Brothers		Sisters		Total Number	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
LR	1.08	0.80	0.96	0.82	3.04	1.08
AR	0.65	0.71	0.77	0.76	2.42	0.83
VR	0.96	0.96	0.89	0.82	2.85	1.26
HR	0.80	0.58	0.76	0.83	2.56	0.92

Note: Total Number column includes participants.

2.4.5 Place in the Family (Birth Order)

As compared to participants in the other groups, LR students were more frequently later born rather than being the first or second child in the family (Table 8). However, the difference across groups was not statistically significant (F (3, 123) = 1.32, $p < .27$).

Table 8 **Place in the Family**

Readiness Group	Mean	SD
LR	2.27	1.34
AR	1.75	.87
VR	1.81	1.44
HR	1.92	.93

2.4.6 Employment Status of Participants' Parents

Most of the fathers of participants (95.3%) and three out of five mothers (62.8%) were reported to be employed outside the home (Table 9). No attempt was made to determine whether work was full-time, part-time, or seasonal. The employment status of seven mothers and three fathers was unknown. Two fathers were deceased and one participant indicated his mother was a single parent.

Table 9 **Employment Status of Participants' Parents**

	Readiness Group (Ns)			
	LR	*AR*	*VR*	*HR*
Fathers				
Employed	25	51	24	23
Unknown		1	1	1
Mothers				
Employed	16	34	15	16
Homemaker	9	12	8	8
Student	1			1
Unemployed	2			
Unknown	6	1		

Statistically, no significant difference in employment status was found for either fathers (χ^2 (3, N = 126) = 1.27, p <.74) or mothers (χ^2 (12, N = 127) = 19.70, p <.07), although the difference between mothers approached significance.

The occupational status of parents of participants was determined by assigning individuals to one of nineteen occupational categories (Table 10), as defined by Blishen (1967). Chi square analysis of the distribution of occupational status across the four readiness groups failed to find a significant difference either for mothers (χ^2 (38, N = 129 = 46.92, p <.105) or fathers (χ^2 (42, N = 129 = 51.79, p <.143). Relative to other parents, however, the occupations of parents of LR participants were more frequently classified as semi-skilled or unskilled (Table 10).

Table 10 **Occupational Status of the Parents of Participants**

Occupational Status	Fathers (Ns)				Mothers (Ns)			
	LR	*AR*	*VR*	*HR*	*LR*	*AR*	*VR*	*HR*
Self-employed Professional				1				
Professional	1	6	3	4		3		1
High Level Management	2	1		1				
Semi-Professional	1	2	1	1	1	4	1	4
Technician		1		2	1	1		
Middle Management	4	11	7	4		5		1
Supervisor			1	1				
Foreman								
Skilled Clerical-Sales-Service	1		1	2		8	4	4
Skilled Crafts & Trades	2	18	3	4		1		
Farmer	1	1	1	1				
Semi-Skilled Clerical-Sales-Service	2			1	6	8	5	5
Semi-Skilled Manual	7	8	8	1	1	2	3	
Unskilled Clerical-Sales-Service	3	2			7	1	2	1
Labourer	1							
Farm Labourer								
Unemployed							2	
Out of Labour Force					10	12	8	9
Unknown		1	1	1		6	1	

3. Results

3.1 Phase One: The Elementary School Years September 1, 1979 - June 30, 1988

3.1.1 Metropolitan Readiness Test

Level I Form P of the MRT was administered midway through the Kindergarten year. Level II Form P, the readiness measure used to assign participants to the designated comparison groups, was administered at the end of the Kindergarten year.

Level II Form P

One way analysis of variance indicated that the difference in mean scores on the pre-reading composite scale was highly significant ($F(3, 125) = 183.60$, $p < .000$), with LR students receiving the lowest mean score and HR students the highest mean (Table 11). Pre-reading composite mean scores for the AR and VR group, which fell in the mid-range of scores, were the only non-significant paired comparison ($t(76) = .56$, $< .58$). Results from one way analysis of variance (Table 11) and paired comparisons (Table 12) on other subscales of the MRT II replicated the results on the pre-reading composite scores.

Level I Form P

Although far fewer students had been assessed on Level I of the MRT the results of the ANOVA replicated the pattern of results found on the Level II assessment (Table 11). Similarly, results from the paired comparisons were consistent with the results found on Level II, but with slightly fewer significant differences (Table 12).

Table 11 **Means and ANOVA Results for the MRT Form P Level II and I**

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
MRT II						
Pre-reading						
Composite (S)	M	2.04	4.94	4.81	7.32	F (3, 125) = 183.60, p < .000
	SD	0.82	0.75	1.10	0.48	
Auditory (S)	M	3.04	5.15	5.35	6.96	F (3, 125) = 38.94, p < .000
	SD	1.00	1.13	2.08	0.79	
Visual (S)	M	2.30	4.65	4.58	7.04	F (3, 125) = 59.31, p < .000
	SD	0.97	1.17	1.79	1.06	
Language (S)	M	2.62	5.37	6.00	7.12	F (3, 125) = 39.47, p < .000
	SD	1.36	1.21	2.47	1.24	
Quantitative (S)	M	2.31	4.63	4.85	6.80	F (3, 125) = 47.94, p < .000
	SD	1.01	1.32	1.69	1.29	

Table 11 (continued)

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
MRT I						
Pre-reading						
Composite (S)	M	2.42	4.96	4.46	6.55	F (3, 55) = 18.00, p < .000
	SD	1.17	1.61	1.45	0.82	
Auditory (R)	M	1.42	1.87	1.64	2.25	F (3, 57) = 3.84, p < .000
	SD	0.67	0.63	0.63	0.62	
Rhyming (R)	M	1.25	2.17	2.29	2.58	F (3, 57) = 13.25, p < .000
	SD	0.45	0.65	0.47	0.52	
Visual (S)	M	2.83	5.59	5.29	6.82	F (3, 55) = 10.89, p < .000
	SD	1.47	1.79	2.02	1.54	
Language (S)	M	2.23	4.86	3.62	6.00	F (3, 55) = 14.81, p < .000
	SD	1.36	1.73	1.50	1.10	

Note: S = stanine (1-9), R = rank (1-3)

Table 12 **Significance Levels of T-test Comparisons Between Readiness Groups on Subscales of the MRT Form P Level II and I**

MRT II (Level of Significance)

Paired Comparison	Pre-Reading Composite	Auditory	Visual	Language	Quantitative
LR - AR	.00	.00	.00	.00	.00
LR - VR	.00	.00	.00	.00	.00
LR - HR	.00	.00	.00	.00	.00
AR - VR	.58	.66	.84	.22	.55
AR - HR	.00	.00	.00	.00	.00
VR - HR	.00	.00	.00	.00	.00

MRT I (Level of Significance)

Paired Comparison	Pre-Reading Composite	Auditory	Rhyming	Visual	Language
LR - AR	.00	.07	.00	.00	.00
LR - VR	.00	.39	.00	.00	.00
LR - HR	.00	.01	.00	.00	.00
AR - VR	.35	.30	.55	.65	.35
AR - HR	.00	.10	.05	.05	.00
VR - HR	.00	.02	.14	.04	.00

3.1.2 Otis-Lennon Mental Ability Test, Gates-MacGinite Reading Test, Canadian Test of Basic Skills

Students within the school division were administered various standardized tests, in addition to the MRT assessments in Kindergarten, at various times throughout the elementary school years, from age seven through age fourteen. One way analysis of variance and paired comparisons were undertaken for all measures, including results from tests which had been administered to only a small number of students who became participants in the Class of '79 project. Across all measures, including Form J and K of

the Otis-Lennon Mental Ability Test: Intermediate Level; Gates- MacGinitie Reading Tests, Primary Level, A and B Form 2 and Level C and D, Form 1; and Levels 12 and 14 Form 5 of the Canadian Test of Basic Skills; the pattern of results was similar, even when small n's limited meaningful statistical comparison. The LR group consistently received significantly lower mean scores than students in the other three readiness groups. Participants in the HR group consistently had the highest means and the mean scores of the AR and UR students were both consistently similar and consistently in the mid-range of scores on any particular measure (Tables 13, 14 and 15). The only non-significant statistics were found on the limited data recorded for Form D of the Gates-MacGinitie Reading Test (Table 14), even though the direction of the results was consistent with the pattern on all other measures.

Table 13 **Means and ANOVA Results on Form J and K of the Otis-Lennon Mental Ability Test**

		Groups				ANOVA
		LR	*AR*	*VR*	*HR*	
Otis-Lennon: Form J						F (3,90) = 5.56, p < .002
DIQ*	M	94.38	108.20	110.04	115.18	
	SD	8.13	10.48	12.20	16.77	
	n	8	41	23	22	
Otis-Lennon: Form K						F (3,29) = 12.94, p < .000
DIQ*	M	84.85	103.08	108.33	131.25	
	SD	9.79	15.90	22.50	8.14	
	n	13	13	3	4	

Note: The Otis-Lennon Mental Ability Test is reviewed in Buros (1975, p. 876)
*DIQ = Deviation Intelligence Quotient
M Ages (months) at Test Dates: 149.09 (Form J); 156.61 (Form K)

Table 14 **Means and ANOVA Results on the Gates-MacGinitie Reading Test: Primary A and B Form 2, Primary C Form 1, and Survey D Form 1**

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
Gates-MacGinitie: A Form 2						
Vocabulary G.E.	M	1.88	2.81	2.59	3.14	F (3,96) = 15.93, p < .000
	SD	0.56	0.58	0.74	0.34	
	n	19	42	22	17	
Comprehension G.E.	M	1.74	2.68	2.54	3.14	F (3,95) = 15.74, p < .000
	SD	0.51	0.65	0.75	0.59	
	n	19	42	21	17	
Gates-MacGinitie: B Form 2						
Vocabulary G.E.	M	2.61	3.73	3.71	4.48	F (3,100) = 6.75, p < .000
	SD	0.96	1.05	1.17	1.04	
	n	8	46	25	25	
Comprehension G.E.	M	2.40	3.87	3.74	4.92	F (3,100) = 10.03, p< .000
	SD	0.95	1.31	1.23	0.99	
	n	8	46	25	25	

Table 14 (Continued)

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
Gates-MacGinitie: C Form 1						
Vocabulary G.E.	M	3.14	4.29	4.31	5.48	F (3,108) = 16.45, p<.000
	SD	0.51	1.12	1.28	1.23	
	n	19	47	21	25	
Comprehension G.E.	M	3.55	4.89	5.09	5.94	F (3,108) = 9.95, p<.000
	SD	1.04	1.68	1.76	1.49	
	n	19	47	21	25	
Gates-MacGinitie: D Form 1						
Vocabulary G.E.	M	3.66	4.46	4.03	5.30	F (3,25) = 0.94, p< .435
	SD	0.65	1.64	0.75		
	n	8	14	6	1	
Comprehension G.E.	M	3.08	4.02	3.97		F (2,18) = 2.54, p< .116
	SD	0.78	0.74	0.91		
	n	5	10	6		

Note. The GMRT is the Canadian Edition (Mitchell, 1985, p. 597)
M Ages (months) at Test Dates: 84.07 (A Form 2), 95.28 (B Form 2), 108.49 (C Form 1), 24.46 (D Form 1)

Table 15 Means and ANOVA Results on the Canadian Test of Basic Skills: Level 12 and 14 Form 5

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
CTBS: Level 12 Form 5						
Vocabulary	M	15.11	51.62	56.52	72.52	F (3,114) = 18.00 p < .000
	SD	13.77	28.06	31.62	21.10	
	n	19.00	50.00	25.00	24.00	
Reading	M	17.32	51.60	56.36	71.00	F (3,114) = 15.73 p < .000
	SD	17.82	26.43	29.52	26.54	
	n	19.00	50.00	25.00	24.00	
Total Language	M	22.63	55.33	48.84	74.75	F (3,113) = 12.85 p < .000
	SD	22.52	28.99	29.89	26.16	
	n	19.00	49.00	25.00	24.00	
Work Study	M	24.79	56.80	52.28	76.00	F (3,114) = 14.60 p < .000
	SD	20.96	25.48	29.13	24.18	
	n	19.00	50.00	25.00	24.00	
Total Math	M	21.79	54.52	53.24	75.42	F (3,114) = 15.51 p < .000
	SD	16.83	26.90	33.57	18.17	
	n	19.00	50.00	25.00	24.00	
Composite	M	15.42	54.92	55.20	77.29	F (3,113) = 21.55 p < .000
	SD	13.13	26.98	31.09	21.81	
	n	19.00	49.00	25.00	24.00	

Table 15 (Continued)

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
CTBS: Level 14 Form 5						
Vocabulary	M	20.57	56.72	54.71	72.17	F (3,91) = 7.63 p < .000
	SD	16.38	25.38	30.81	22.42	
	n	7.00	43.00	21.00	24.00	
Reading	M	22.00	58.00	65.00	67.50	F (3,91) = 5.90 p < .001
	SD	19.73	26.34	22.10	30.20	
	n	7.00	43.00	21.00	24.00	
Total Language	M	22.50	59.83	58.11	72.79	F (3,86) = 5.93 p < .001
	SD	14.08	24.06	28.69	24.69	
	n	6.00	42.00	19.00	23.00	
Work Study	M	34.00	61.10	59.19	71.27	F (3,84) = 3.39 p < .021
	SD	23.80	19.85	26.85	28.93	
	n	5.00	40.00	21.00	22.00	
Total Math	M	28.00	60.84	58.05	70.61	F (3,90) = 4.28 p < .007
	SD	14.67	24.51	30.22	27.26	
	n	6.00	43.00	22.00	23.00	
Composite	M	26.33	59.03	61.33	73.50	F (3,82) = 6.14 p < .000
	SD	14.05	21.47	27.80	27.62	
	n	6.00	40.00	18.00	22.00	

Note: The CTBS is a Canadian adaptation of the Iowa Tests of Basic Skills (Mitchell, 1985, p. 260)
M Ages (months) at Test Dates: 145.43 (Level 12); 164.73 (Level 14)

3.1.3 Academic Performance Year-end Grades

Grade Seven

As one measure of academic performance, year-end grades in core classes, English, Mathematics, Social Studies, Science, and French were analyzed employing ANOVA and T-tests for independent samples. Separate analyses were undertaken for grade seven and grade eight. For some individuals delayed advancement meant completing a class and a grade at a different time than other students. Similar to the results recorded on standardized tests, LR students consistently had the lowest averages both in their overall average for grade seven and in each of the core classes. High readiness (HR) students consistently had the highest averages. Students in the AR and VR groups had similar results for all subjects, with means in the low seventies, as compared to the low sixties for the LR group and high seventies for the HR group. The differences in mean scores across the four groups were statistically significant (Table 16).

Grade Eight

The analysis of year-end grades for grade eight essentially replicated the pattern of results for grade seven (Table 16). A minor difference between the two school years was a decline in the overall average

of students in grade eight, with the largest decline (5.5 percent) occurring in the LR group. In all cases the differences in mean grades across the readiness groups was statistically significant.

Table 16 **Means and ANOVA Results of Year-End Grades for Grades Seven and Eight**

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
Grade Seven:						
English	M	63.52	74.94	73.58	80.16	F (3,120) = 11.16, p <.000
	SD	10.96	9.94	10.64	8.05	
	n	21.00	52.00	26.00	25.00	
Mathematics	M	63.00	72.62	71.04	79.80	F (3,119) = 5.85, p <.001
	SD	11.86	12.80	15.95	13.22	
	n	20.00	52.00	26.00	25.00	
Social Studies	M	63.33	72.62	68.38	77.88	
	SD	14.15	14.14	15.23	11.92	F (3,120) = 4.70, p <.004
	n	21.00	52.00	26.00	25.00	
Science	M	64.35	69.98	70.88	77.60	
	SD	9.58	11.37	14.39	9.25	F (3,118) = 5.15, p <.002
	n	20.00	51.00	26.00	25.00	
French	M	63.30	76.31	72.15	81.20	
	SD	13.35	12.37	16.43	11.22	F (3,105) = 4.94, p <.003
	n	10.00	48.00	26.00	25.00	
Average	M	63.52	73.33	71.27	79.40	
	SD	9.15	10.77	13.33	9.54	F (3,120) = 8.32, p <.000
	n	21.00	52.00	26.00	25.00	
Grade Eight:						
English	M	61.56	72.60	70.96	78.84	F (3,107) = 8.20, p <.000
	SD	9.99	11.28	12.19	9.65	
	n	16.00	47.00	23.00	25.00	
Mathematics	M	59.80	73.13	75.65	82.12	F (3,107) = 9.83, p < .000
	SD	12.50	13.28	12.62	11.81	
	n	15.00	47.00	23.00	25.00	
Social Studies	M	59.82	71.09	70.48	76.20	F (3,108) = 4.90, p < .003
	SD	16.15	13.60	14.53	11.15	
	n	17.00	47.00	23.00	25.00	
Science	M	53.25	66.98	66.34	74.36	F (3,107) = 7.67, p < .000
	SD	15.95	13.33	15.63	11.07	
	n	16.00	47.00	23.00	25.00	
French	M	54.36	74.38	72.36	79.28	F (3,100) = 9.81, p < .000
	SD	14.19	13.11	13.93	10.88	
	n	11.00	45.00	22.00	25.00	
Average	M	58.07	71.49	70.78	78.16	F (3,106) = 10.09, p < 000
	SD	11.13	11.58	12.53	9.05	
	n	15.00	47.00	23.00	25.00	

3.1.4 Achievement Record: Grades K-8

As a complement to more time limited measures of academic performance, the researcher endeavored to provide an overall assessment of progress from Kindergarten through the elementary grades (K-8).

Students were assigned to one of eight categories of performance (Table 17) based on the researcher's review of all available information, including progress reports, teachers' year-end assessments, special service reports, and final grades. In essence the objective was to provide a summary indication of each student's academic performance.

Evidence of above-average academic performance between 1979 and 1988 resulted in students being assigned to the "consistently high achievement" category. To be place in the category of "accelerated achievement" required evidence of consistent improvement within the regular academic program. "Variable achievement" was the category used to describe students whose progress was mixed, doing well is some aspects of the regular program but less well in other areas and/or recording variable performance from one year to another. Within the regular academic program the performance of some students was categorized as "average achievement" or "low achievement." Students described as having delayed achievement were placed in either the "extended regular program" category or in the "extended modified program" category. "Insufficient information" was the designation used when evidence of academic progress was deemed to be inadequate to support assignment to any of the other categories.

Chi-square analysis of the distribution of students across the descriptive categories of K-8 academic performance revealed a significant difference between the readiness groups (χ^2 (21, N=129) = 103.50, $p < .000$). Students in the LR group were predominantly concentrated in the two categories of delayed advancement. In contrast, a high percentage (60%) of HR students were assigned to the "consistently high achievement" category. Students in the AR and VR groups were more evenly distributed across the designated categories of achievement (Table 17).

Table 17 **Descriptive Summary of K-8 Academic Performance**

Academic Program	Category Of Achievement	Groups			
		LR	*AR*	*VR*	*HR*
Regular Advancement	Consistently High Achievement		10	5	15
	Accelerated Achievement		5	4	1
	Average Achievement	2	11	6	7
	Variable Achievement		3	3	1
	Low Achievement			2	
Delayed Advancement	Extended Regular Program	7	9	2	
	Extended Modified Program	15	1	1	
Insufficient Information		2	13	3	1

3.1.5 Special Service Reports on File: 1979-1988

Psychological Assessment

Between September of 1979 and June of 1988, one hundred and five psychological assessments were carried out with students in the Class of '79 project. Eighty of the 129 students, however, did not have a record of psychological assessment during their elementary school years. Of the 49 students who were assessed a large number (65.3%) were tested more than once (Table 18). Chi square analysis indicated that the frequency of testing was significantly different across the groups (χ^2 (15, N = 129) = 69.47, p < .000).

All but three students in the LR group (88.5%) had a record of assessment on file, with 22 of the 23 students having been assessed more than once (Table 18). The mean age of all students tested, at the time of the first assessment, was 91.96 months or seven years and eight months. Students in the LR were not only tested more often than other students, but also at a younger age (82.30 mos.). Students in the HR group were least likely (16%) to have been referred for assessment, but when referred, tested at an older age (112.00 months) than students in the other groups.

Table 18 **Psychological Assessments Between 1979 and 1988**

	Groups				
Number	*LR*	*AR*	*VR*	*HR*	**Chi-square**
0	3	37	19	21	(χ^2, (15, N = 129) = 69.47, p <.000
1	1	9	3	4	
2	13	4	1		
3	4	2	2		
4	2				
5	3		1		

M age at first assessment: 82.30 (LR); 101.71 (AR); 95.57 (VR); 112.00 (HR)

Over 60 percent of the initial psychological assessments were carried out in Kindergarten (19.1%) and grade one (42.6%). In seventy-eight percent of the cases, the primary reason given for the referral was to assess the student's ability (Table 19). In essence, the eligibility for funding and reading assessment reasons for referral were comparable to assessing ability, hence most referrals were for ability assessment.

Table 19 **Grade at First Psychological Assessment and Primary Reason Given for Referral**

Grade	N	%	Reason	N	%
K	9	19.1	Reading Assessment	4	9.5
1	20	42.6	Ability Assessment	33	78.6
2	2	4.3	Eligibility for Funding	1	2.4
3	7	14.9	Emotional Problems	1	2.4
4	3	6.4	Interpersonal Problems		
5	3	6.4	Other	3	7.1
6	1	2.1			
7	2	4.3			
8					

Note: For five students the reason for referral was not specified in the psychological report

Of the large number of LR students referred for psychological assessment, 78% were first tested either in Kindergarten (30.4%) or grade one (47.8%).

Consistent with the reasons given for referrals, most psychological assessments included scores on tests of intelligence (Wechsler Pre-School and Primary Scale of Intelligence, Wechsler Intelligence Scale for Children) and to a lesser extent scores on vocabulary (Peabody Picture Vocabulary Test) and reading tests (Woodcock Reading Mastery Test). Statistical comparison across the readiness groups was constrained by skewed distributions and small n's. Given the difficulty of ascribing statistical significance to data of this kind, the comparative results reported in this section of the paper have been limited to the first assessment of intelligence. Differences in special services across the readiness groups will be considered more fully in the discussion.

Of the thirteen students tested on the Wechsler Pre-School and Primary Scale of Intelligence, seven were in the LR group, none in the HR group. Results on the WISC-R were based on a larger sample (N=29) but disproportionately applicable to the LR and AR groups (Table 20). One way analysis of variance found a significant difference when comparing mean scores on the verbal, performance , and fullscale of the WISC-R but not on the Pre-School and Primary Scale.

Table 20 **Means and ANOVA Results on the Wechsler Pre-School and Primary Scale of Intelligence and WISC-R**

		Groups				Anova
		LR	*AR*	*VR*	*HR*	
WISC-R:						
VIQ	M	88.42	94.00	101.00	112.00	F(3,24) = 4.28, p < .015
	SD	14.01	9.20	5.39	6.08	
	n	8.00	5.00	3.00		
PIQ	M	88.33	94.75	103.80	124.33	F(3,24) = 9.68, p < .002
	SD	11.89	11.78	8.04	4.16	
	n	12.00	8.00	5.00	3.00	
FSIQ	M	87.42	96.89	102.40	120.00	F(3,25) = 7.14, p < .001
	SD	12.77	13.39	3.36	3.00	
	n	12.00	9.00*	5	3.00	
PRE-SCHOOL:						
VIQ	M	99.29	104.25	112.50		F(2, 10) = 1.28, p < .319
	SD	10.94	9.54	10.61		
	n	7.00	4.00	2.00	0	
PIQ	M	96.43	105.75	96.00		F(2, 10) = 0.94, p < .424
	SD	13.01	4.35	15.56		
	n	7.00	4.00	2.00	0	
FSIQ	M	97.71	105.25	105.00		F(2, 10) = 1.09, p < .373
	SD	8.73	7.41	14.14		
	n	7.00	4.00	2.00	0	

*Note: One WISC-R report for the AR group only gave the FSIQ score. Reviews of the WPPSI and WISC-R are in Buros (1975, p. 987).

Speech/Hearing Assessment

Over the elementary school years, thirty students in the Class of 79 project had a record of speech hearing assessment in their cumulative files. Of these, 40 percent were assessed more than once (Table 21). Chi square analysis indicated that the difference in the number of assessments between groups was significant (χ^2 (12, N =129) = 23.14, p < .027).

Thirteen students, one-half of the LR group, had speech/hearing assessments, seven individuals more than once. In contrast, only two students in the HR group were assessed, once for one individual, twice for another.

Table 21 **Speech/Hearing Assessments Between 1979 and 1988**

	Groups			
Number	*LR*	*AR*	*VR*	*HR*
0	13	42	21	23
1	6	9	2	1
2	5		2	1
3	1		1	
4				
5	1	1		

Special Service Reports

Special service reports were categorized as any reports in students' cumulative files which described referrals for specialized services, the results of special testing and/or examination, details of special services, and reports on student progress in special programs.

Across the spectrum of special service reports, students in the LR group had the highest percentage of reports and highest percentage of multiple reports. Except for two categories of special services, the learning assistance program and medical reports, the differences across groups were statistically significant (Table 22).

Table 22 **Number of Special Service Reports on File Between 1979 and 1988**

Report	N	Groups				Chi Square
		LR	*AR*	*VR*	*HR*	
Special Education or Placement Review		15	47	26	23	(χ^2 (21, N = 129) = 39.77, p < .008
	1	3	3		1	
	2		1		1	
	3					
	4	2				
	5	1				
	6	3	1			
	8	2				
Resource Service	0	12	46	20	24	(χ^2 (18, N = 129) = 36.37, p < .006
	1	4	4	2	1	
	2	5	2	2		
	3	1		2		
	4	2				
	5	1				
	6	1				
Extended Readiness	0	18	47	26	25	(χ^2 (6, N = 129) = 21.07, p < .002)
	1	4				
	2	1				
Learning Assistance Program	0	24	52	26	24	
	1				1	
	2	2				
Medical Reports	0	22	49	23	23	(χ^2 (9, N = 129) = 11.92, p < .433)
	1	2		3	2	
	2	2				
	3	1	1			

File Indications of Suspected and Confirmed Health-Related Problems Between 1979 and 1988

In reviewing student files for any suggestion or indication of health-related problems, a distinction was made between suspected problems and problems confirmed through referrals and more complete

assessment and investigation. Covering the spectrum from heart conditions, asthma, allergies, visual and auditory difficulties, physical handicaps, and suspected neurological problems, students in the LR group had the highest frequency of suspected problems but lowest percentage (38.9%) of confirmation amongst those suspected of having problems (Table 23).

Table 23 **File Indications of Suspected and Confirmed Health-Related Problems Between 1979 and 1988**

Health-Related Problems	Groups				Chi Square
	LR	*AR*	*VR*	*HR*	
Suspected	18	9	11	3	χ^2 (3, N = 60) = 0.95, p < .950
Confirmed	7	5	5	2	

Reading and Academic Progress Reports: 1979 – 1988

Ninety-three of the 129 participants had reading progress reports in their cumulative files specific to particular times during the elementary school years (Table 24). All but one student in the LR group had a reading report on file while 60% of LR students had five or more such reports. Students in the other readiness groups had fewer reading reports and fewer students had multiple reports. One way analysis of variance indicated that the mean difference between groups was significant (F (3, 125)= 14.15 p< .000). As compared to reading reports, fewer students in all groups had academic progress reports on file and the difference in the mean number of reports was not statistically significant (F (3, 125) = 1.36, p< .258).

Table 24 **Number of Reading and Academic Progress Reports. On File Between 1979 and 1988**

	Reading				Academic			
	LR	*AR*	*VR*	*HR*	*LR*	*AR*	*VR*	*HR*
Number:								
0	1	16	10	9	13	41	18	19
1	3	7	1	6	5	1	1	1
2	2	10	4	5	2	2	3	
3	1	9	6	3	1	3	3	1
4	3	4		1	2	3		2
5	4	3						2
6	3	1	3	1	2	2	1	
7	6	2						
8	1		1					
9			1		1			
10	1							
14	1							
M	5.15	2.02	2.39	1.40	1.58	0.73	0.85	0.88
SD	3.09	1.93	2.65	1.53	2.39	1.59	1.52	1.74
N	26	52	26	25	26	52	26	25

As found in the comparison between pre-reading composite scores on Level II Form P of the MRT, and information contained in reading, academic and psychological reports for the twelve month period following the MRT II assessments at the end of the Kindergarten year (Table 2), the cumulative files of the LR students contained more reports for more students than for students in the other readiness groups (Table 18 and 24). Judging not only by the disproportionately large number of reports contained in the files of the LR students but also by the detailed accounts of special services directed to individuals in the LR group, the school division provided a wide range of resources to students considered to be at-risk or at least in need of modified programming and support.

3.1.6 Interviews with Students: 1988

In May and June of 1988 the researcher conducted personal interviews with each of the 129 students who had agreed to participate in the Class of '79 project. The format of the interviews included open-ended questions, mainly about schooling, but also about other aspects of each individual's life. For the purposes of this paper, only a limited number of questions asked in the interviews will be addressed. Responses to the remaining questions will be reported in a subsequent paper.

Question: Do you expect to complete high school?

Nine out of ten students in the total sample were unequivocal about completing high school (Table 25). Chi-square analysis found no significant difference between the groups (χ^2 (6, N = 128) = 6.71, p < .348).

Table 25 **Expectations About Completing High School**

Response	Groups			
	LR	*AR*	*VR*	*HR*
Yes – Definitely	22	48	22	23
Yes – Probably	2	3	4	2
Don't Know	2	1		

Question: Do you plan to continue your education after high school?

Approximately sixty percent of the total sample gave an unqualified affirmative indication that they planned to continue their education beyond high school (Table 26). Including those who gave a qualified affirmative response, the percentage increased to seventy-eight percent. However, chi-square analysis indicated that the difference between groups was significant (χ^2 (15, N = 129) = 29.29, p < .015).

Although a majority of LR students gave affirmative responses, the percentage was lower than in the other readiness groups and more students indicated they did not plan to continue their education past high school. In contrast, every student in the HR group gave an affirmative response. When asked to elaborate, students typically made reference to specific educational institutions and programs or explained why they did not expect to pursue post-secondary education. Several students made reference to specific occupational goals which require advanced education and training. Chi-square analysis indicated that the difference between the groups was significant (χ^2 (21, N = 129) = 38.69, p < .011). Seventy-two students, 55.9 % of the total sample, indicated they planned to attend university. Within the HR group the percentage was 80%, including 24% who said they intended to pursue professional degrees, such as medicine and law. In comparison, 26.8% of LR students indicated attending university was a goal, only one student referred to a professional degree, and 42.3% indicated they did not have plans for post-secondary education.

Table 26 **Plans for Pursuing Post-Secondary Education**

	Groups			
	LR	*AR*	*VR*	*HR*
Response:				
Yes – Definitely	9	33	17	18
Yes – Probably	5	7	4	7
No – Not likely	2	1		
No – Definitely not	5	3		
Don't Know	3	7	5	
Other	2	1		
Institution:				
University – general	3	8	1	5
University – specific program	3	12	13	9
University – professional degree	1	9	2	6
Technical School	4	4	1	2
Community College	1	3	1	1
Cosmotology School	1	1		
Other	2	10	3	2
No plans to continue	11	5	5	

Experimental Self Assessment Scale

At the end of each interview students completed an experimental scale of self assessment developed by the experimenter for his doctoral research in Psychology (Elkin, 1972). One way analysis of variance of mean total scores on the instrument approached but did not reach statistical significance (F (3, 125) = 2.35, p < .076). Students in the HR group had the highest mean, students in the LR group the lowest mean (Table 27). Comparison of mean scores on each of the 26 pairs of descriptive adjectives which make up the scale found significant statistical differences on six pairs: bad-mannered/well-mannered,

efficient/inefficient, intelligent/ stupid, educated/uneducated, successful/unsuccessful, and loyal disloyal. In all cases, HR students had the highest scores and LR students the lowest scores. Despite these statistical differences, however, mean scores on the self assessment scale for all readiness groups were consistent with a positive self assessment (Table 27). The scale, based on seven point semantic differential scaling (Osgood, Suci, and Tannebaum, 1957), had a range of total scores from a minimum of 26 to a maximum of 182. Mean scores for all the groups were at the higher end of the measure.

Table 27 **Means and ANOVA Results for the Experimental Self Assessment Scale**

Scale Items	Groups				Anova
	LR	*AR*	*VR*	*HR*	
Dissatisfied/Contented	4.92	5.12	5.19	5.68	F (3, 125) = 1.61, p < .191
Dirty/Clean	6.08	6.35	6.39	6.40	F (3, 125) = 0.75, p < .525
Healthy/Sickly	6.00	6.14	5.81	6.32	F (3, 125) = 0.66, p < .579
Delightful/Disgusting	5.50	5.58	5.65	5.76	F (3, 125) = 0.36, p < .787
Insecure/Secure	4.92	5.14	5.31	5.60	F (3, 125) = 1.11, p < .348
Pleasing/Irritating	4.85	5.17	5.15	5.12	F (3, 125) = 0.36, p < .782
Bad Mannered/Well Mannered	4.92	5.75	5.73	5.76	F (3, 125) = 3.65, p < .015
Efficient/Inefficient	4.62	5.12	5.27	5.60	F (3, 125) = 2.85, p < .040
Intelligent/Stupid	5.35	5.56	5.89	6.12	F (3, 125) = 3.45, p < .019
Educated/Uneducated	5.31	6.08	5.92	6.44	F (3, 125) = 6.04, p < .000
Creative/Uncreative	5.77	5.58	5.27	5.64	F (3, 125) = 0.66, p < .576
Aimless/Ambitious	6.15	5.89	5.85	6.44	F (3, 125) = 1.87, p < .138
Successful/Unsuccessful	5.15	5.52	5.77	6.04	F (3, 125) = 2.86, p < .040
Lazy/Energetic	5.73	5.56	5.00	5.68	F (3, 125) = 1.14, p < .335
Unreliable/Reliable	5.42	5.83	5.39	5.80	F (3, 125) = 1.08, p < .454
Confident/Unconfident	5.54	5.62	5.42	6.08	F (3, 125) = 1.51, p < .215
Friendly/Offensive	6.19	6.25	6.39	6.32	F (3, 125) = 0.32, p < .808
Uncooperative/Cooperative	5.58	5.69	5.89	5.64	F (3, 125) = 0.31, p < .817
Loyal/Disloyal	5.50	5.87	6.23	6.28	F (3, 125) = 4.33, p < .006
Untruthful/Truthful	5.54	5.92	5.62	5.92	F (3, 125) = 0.94, p < .426
Unstable/Stable	5.12	5.31	5.58	5.76	F (3, 125) = 1.78, p < .155
Valuable/Worthless	5.58	5.65	5.73	5.84	F (3, 125) = 0.26, p < .851
Distasteful/Tasteful	5.46	5.37	5.46	5.96	F (3, 125) = 1.61, p < .190
Sloppy/Neat	5.46	5.87	5.62	5.52	F (3, 125) = 0.70, p < .553
Hard to Get Along With/Easy to Get Along With	5.92	5.94	6.12	5.92	F (3, 125) = 0.14, p < .934
Total Score	136.58	141.58	141.54	147.92	F (3,125) = 2.35, p < .076

3.1.7 Class Characteristics

Size of Classes

In addition to tracking the performance of students over the elementary school years and documenting certain aspects of service delivery, as recorded in cumulative files, a comparison was made of the size of classes and frequency and timing of enrollment in split-grades for each student, from the time of school entry in 1979 to the end of the school year in 1988.

The mean number of pupils per class for the total sample during the elementary school years was 23.7 students. No significant difference was found between the groups (F (3, 123) = 0.20, $p < .897$). Although there was some variation in class size between the readiness groups over the years, none of the differences were found to be significant (Table 28).

Table 28 **Means and ANOVA Results for Class Size. From Kindergarten through Grade Eight**

	Groups				Anova
	LR	*AR*	*VR*	*HR*	
Grade					
K	22.27	22.40	21.71	23.84	F (3, 123) = 1.13, $p < .343$
1	21.44	22.61	21.50	21.48	F (3, 123) = 1.10, $p < .351$
2	22.46	22.52	21.81	20.52	F (3, 123) = 2.07, $p < .108$
3	24.04	24.42	24.62	25.32	F (3, 123) = 0.92, $p < .432$
4	24.12	24.28	24.85	24.64	F (3, 123) = 0.49, $p < .689$
5	24.63	23.26	24.85	24.33	F (3, 123) = 1.26, $p < .293$
6	23.50	24.76	24.85	24.52	F (3, 123) = 0.91, $p < .441$
7	25.32	25.22	25.28	25.76	F (3, 123) = 0.08, $p < .970$
8	26.71	24.21	23.68	24.36	F (3, 123) = 1.15, $p < .334$
Mean	23.60	23.80	23.62	23.80	F (3,123) = 0.20, $p < .897$

Split-Classes

The term split-class was used to describe classes which provided academic programming for students at two different grade levels, for example, grade one and two. Fifty students, 38.8% of the total sample, had never been in a split-class between 1979 and 1988. Of the 79 individuals who had been in split-classes, the majority had either been in one (50%) or two (22.8%) such classes. Twenty-one students were members of split-classes for three or more grades, seven students for five or more grades. One way analysis of variance indicated that the mean frequency of placement in split-classes was not significantly different between the groups (F (3, 125) = 1.05, $p < .371$).

In addition to comparing split-class enrollment from Kindergarten through grade eight, comparisons were also made at different stages of the elementary program (Table 29). Comparing the mean frequency of split-classes for the K-2 time frame revealed significant differences between the groups (F (3, 123) = 3.80, $p < .012$). LR students had the highest frequency of split-grades, VR students the lowest. None of the other comparisons, including K-4 (F (3, 123) = 1.94, $p < .126$) and grades 5-8 (F (3, 123) = 1.13, $p < .340$) found significant differences.

Table 29 **Means and ANOVA Results for Split-Classes from Kindergarten through Grade Eight**

Grades	Group	Mean	SD	n	Anova
K-8	LR	1.69	1.98	26	F (3, 125) = 1.05, p < .371
	AR	1.17	1.51	52	
	VR	1.00	1.74	26	
	HR	1.56	1.58	25	
K-2	LR	.84	.85	26	F (3, 125) = 3.80, p < .012
	AR	.47	.61	52	
	VR	.23	.51	26	
	HR	.56	.65	25	
K-4	LR	1.16	1.49	26	F (3, 125) = 1.94, p < .126
	AR	.71	.97	52	
	VR	.46	.91	26	
	HR	.88	.97	25	
5-8	LR	.56	.87	26	F (3, 125) = 1.13, p < .340
	AR	.45	.70	52	
	VR	.54	.95	26	
	HR	.68	.85	25	

3.2 Phase Two: High School Years: Grades 9, 10 And 11 September 1, 1988 – June 30, 1991

In May and June of 1991, 101 individuals from the original sample of 129 were contacted and agreed to a second interview. Some individuals were no longer in high school and the whereabouts of others was either unknown or too far away to allow a personal interview. Of those contacted, no one refused to continue as a participant in the study. As of June 30, 1991, three-quarters of the original sample were attending one of three public high schools in the designated school division and two students were attending high school in a nearby community. Another ten individuals had been enrolled in high schools in the city but were no longer in school as of June 30, 1991. Chi-square analysis of the distribution of students in the various placement categories revealed a significant difference across the groups (χ^2 (21, N = 129) = 51.36, p < .000). The LR group had the highest percentage (26.9%) of students who were no longer in high school and a very low enrolment (n=1) in one of the division's high schools (Table 30).

Table 30 **Placement of the Original Sample of 129 Students on June 30, 1991**

Placement	Groups			
	LR	*AR*	*VR*	*HR*
High School				
A School Division	1	14	9	11
B School Division	11	17	5	12
C School Division	4	9	5	
D Rural			2	
E Province			1	
F Out-of-Province				1
No Longer in High School	7	2	1	
Unknown	3	10	3	1

If students had progressed through school without any delays they would have completed grade eleven by June 30, 1991. Of those students for whom complete academic records were available (N = 103), fifty-four (52.4%) successfully completed grade eleven by this date. Across the groups the number of students who proceeded without delay varied significantly (χ^2 (18, $\underline{N}$ = 103) = 39.41, $p < .003$). Of those who remained in the sample, 73.6% of students in the LR group were delayed by one or more years in contrast to 4.3% of those in the HR group (Table 31).

Table 31 **Grade Completed As of June 30, 1991**

Grade Completed	Groups			
	LR	*AR*	*VR*	*HR*
Grade 11	3	22	14	15
Grade 10, Part 11	2	10	2	7
Grade 10	4	2	1	
Grade 9, Part 10	5	6	3	1
Grade 9	1			
Grade 8, Part 9	3		1	
Grade 8				
Less than Grade 8	1			

Another indicator of the varied academic progress of students was the year of entry into high school (Table 32). Chi-square analysis revealed a significant difference across the groups (χ^2 (9, $\underline{N}$ = 106) = 45.96, $p < .000$). Within the revised total sample all 24 HR students entered high school in the fall of 1988, compared to 5 of 19 in the LR group.

Even though the majority of the LR students entered high school a year later (1989) than most students in the Class of '79 project, by June 30, 1991 they had, on average, attended a greater number of high schools (M = 1.32) than students in the AR (M = 1.18), VR (M = 1.18) and HR (M = 1.04) groups. The difference was not statistically significant (F (3, 100) = 1.07, $p < .365$) as a direct comparison, yet an important difference given the disparity in years of high school attendance.

Table 32 **Year of Entry into High School and Number of High Schools Attended up to June 30, 1991**

	Groups			
	LR	*AR*	*VR*	*HR*
Year of Entry:				
1988	5	34	20	24
1989	13	6	2	
1990			1	
1991	1			
Number of High Schools:				
N = 1	15	35	19	22
N = 2	2	3	2	1
N = 3	2	2	1	

3.2.1 Grade Nine: Academic Performance

Consistent with the analysis of academic performance in grades seven and eight, the data used to compare the academic progress of students in grades nine, ten and eleven was based on the record of achievement for each student, regardless of the year in which a particular class or classes were taken.

Year-end Grades

One way analysis of variance revealed a significant difference between mean scores on the combined core classes ($F(3, 99) = 8.99$, $p < .000$), combined elective classes ($F(3, 99) = 5.15$, $p < .002$) and on the combined total ($F(3, 99) = 7.98$, $p < .000$) for all grade nine classes (Table 33). Except for General Math 90, a class taken in lieu of Algebra 90 by students deemed to be weak in mathematical skills, a significant difference between groups was found on all core classes. The pattern of HR students receiving the highest grades, LR students the lowest grades and students in the AR and VR groups obtaining very similar grades in the mid-range between high and low grades, prevailed (Table 33).

Classes designated as core included English 90, Social Studies 90, Algebra 90, Science 90, and General Math 90. Elective classes encompassed a diversity of subjects including traditional academic classes, such as French, to classes in Fine Arts (Drama, Art, Choral, Band), Health, Industrial Arts, Business, Physical Education, Computers and modified classes in English, Social Studies, Science and Mathematics. In many of the elective classes the number of students from one or more of the readiness groups was inadequate to enable a meaningful statistical comparison. Nevertheless, a significant statistical difference was found for Drama 90A ($F(3,47) = 4.05$, $p < .012$), Art 90A ($F(3, 45) = 5.74$, $p < .002$) and Home Economics 90 ($F(2, 4) = 8.59$, $p < .024$). The difference in mean scores for

Industrial Arts 90 approached significance ($F(3, 27) = 2.59$, $p < .073$). For the other 22 elective classes no significant differences were found. With very few exceptions, however, the pattern of LR students receiving the lowest grades and HR students the highest grades persisted. As previously noted, each group's average performance in the combined elective classes essentially replicated the results for the averages recorded for the combined core classes (Table 33).

Table 33 **Means and ANOVA Results for Grade Nine Year-End Grades: Core and Elective Classes**

Core Classes		Groups				Anova
		LR	*AR*	*VR*	*HR*	
English 90A	M	60.40	70.28	68.52	75.63	$F(3, 90) = 3.63$, $p < .016$
	SD	14.07	13.33	12.39	10.77	
	n	10.00	39.00	21.00	24.00	
English 90B	M	62.55	70.13	68.76	76.21	$F(3, 90) = 3.66$, $p < .015$
	SD	13.15	10.46	11.57	13.53	
	n	11.00	38.00	21.00	24.00	
Social Studies 90	M	60.75	69.80	67.82	75.96	$F(3, 92) = 2.63$, $p < .054$
	SD	16.15	14.06	18.34	15.32	
	n	12.00	39.00	22.00	23.00	
Algebra 90A	M	45.40	63.60	68.20	71.25	$F(3, 87) = 4.96$, $p < .003$
	SD	21.77	14.95	16.18	23.03	
	n	10.00	37.00	20.00	24.00	
Algebra 90B	M	57.68	62.10	69.82	75.96	$F(3, 70) = 3.54$, $p < .019$
	SD	17.90	16.22	16.33	17.78	
	n	6.00	31.00	17.00	20.00	
Science 90	M	54.09	66.23	67.82	71.78	$F(3, 91) = 3.91$, $p < .011$
	SD	18.09	12.65	13.22	15.66	
	n	11.00	39.00	22.00	23.00	
General Math 90A	M	42.68	61.00	62.50	61.00	$F(3, 10) = 2.41$, $p < .128$
	SD	17.05	4.95	10.61		
	n	6.00	5.00	2.00	1.00	
Core Average	M	53.06	67.05	66.65	74.13	$F(3, 99) = 8.99$, $p < .000$
	SD	12.98	11.07	13.09	14.30	
	n	16.00	40.00	23.00	24.00	
Elective Average	M	62.19	71.08	70.91	76.54	$F(3, 99) = 5.15$, $p < .002$
	SD	13.47	10.42	12.42	10.09	
	n	16.00	40.00	23.00	24.00	
Overall Average	M	56.88	68.63	68.52	75.17	$F(3, 99) = 7.98$, $p < .000$
	SD	13.15	10.20	12.67	11.71	
	n	16.00	40.00	23.00	24.00	

3.2.2 Grade Ten: Academic Performance

Year-end Grades

Comparing year-end grades for classes designated as core (English 10, Social Studies/History10, Algebra 10, Geometry/Trigonometry 10, Science 10 and Mathematics 10) a significant difference was found on the mean of the combined core classes ($F(3, 93) = 3.99$, $p < .010$) and for the mean of all

grade ten classes, including core and elective classes ($F(3, 93) = 3.45$, $p < .020$). The difference in the means for the combined elective classes approached significance ($F(3, 95) = 2.28$, $p < .084$). In all three comparisons HR students had the highest means, LR students the lowest, with means for the AR and VR groups in the mid range (Table 34).

Table 34 **Means and ANOVA Results for Grade Ten Year-End Grades: Core and Elective Classes**

Core Classes		Groups				Anova
		LR	*AR*	*VR*	*HR*	
English 10A	M	62.25	64.53	70.16	69.96	F (3, 84) = 1.16, p < .329
	SD	14.95	14.75	12.44	17.76	
	n	8.00	38.00	19.00	23.00	
English 10B	M	58.18	63.65	65.68	70.13	F (3, 85) = 1.84, p < .146
	SD	14.24	14.56	14.84	15.01	
	n	11.00	37.00	18.00	23.00	
Social Studies/History	M	53.80	67.50	64.47	73.23	F (3, 85) = 2.71, p < .050
	SD	22.53	17.42	20.37	15.62	
	n	10.00	38.00	19.00	22.00	
Algebra 10A	M	55.17	61.44	67.53	69.36	F (3, 77) = 1.35, p < .265
	SD	18.61	18.57	15.84	23.31	
	n	6.00	36.00	17.00	22.00	
Algebra 10B	M	52.50	61.75	65.00		F (3, 4) = .08, p < .924
	SD	38.91	29.13	36.77		
	n	2.00	4.00	2.00		
Geo-Trig 10A	M	28.00	65.19	68.46	74.93	F (3, 44) = 2.23, p < .098
	SD	16.81	21.77	20.63		
	n	1.00	21.00	11.00	15.00	
Geo-Trig 10B	M	93.00	76.00	82.00	83.00	F (3, 4) = .85, p < .534
	SD		8.72	6.56		
	n	1.00	1.00	3.00	3.00	
Science 10	M	62.63	64.29	66.22	69.00	F (3, 82) = .41, p < .747
	SD	13.30	18.67	16.08	19.44	
	n	8.00	38.00	18.00	22.00	
General Math 10	M	58.80	61.43	61.60	69.00	F (3, 16) = .30, p < .824
	SD	10.66	11.89	20.61	16.70	
	n	5.00	7.00	5.00	3.00	
Core Average	M	56.00	69.93	67.32	70.91	F (3, 93) = 3.99, p < .010
	SD	10.11	13.29	12.65	16.02	
	n	15.00	40.00	19.00	23.00	
Elective Average	M	67.00	72.55	73.90	75.30	F (3, 95) = 2.28, p < .084
	SD	12.67	9.10	9.74	10.99	
	n	17.00	40.00	19.00	23.00	
Overall Average	M	61.13	67.23	69.63	72.96	F (3, 93) = 3.45, p < .020
	SD	10.13	10.86	10.97	13.29	
	n	15.00	40.00	19.00	23.00	

One way analysis of variance of year-end grades for individual classes, both core and elective, found few significant differences across the groups (Table 34). Inadequate numbers of students in one or more of the readiness groups limited meaningful statistical comparisons for many classes. Although a significant difference was found for only one of the core classes, Social Studies History 10 ($F(3,85) = 2.71$, $p < .050$) the pattern of the LR means being lowest, HR means highest and AR and VR means being in the intermediate range, predominated in the other core classes.

Within the large number of elective classes (N=32), one way analysis of variance found statistically significant differences for three classes, Drama 10 ($F(3, 29) = 5.46$, $p < .004$, Home Economic 10 ($F(2,8) = 4.50$ $p < .049$) and Accounting 16 ($F(3,19) = 7.68$, $p < .002$). The direction of the differences replicated the pattern observed in the majority of the core classes.

3.2.3 Grade Eleven: Academic Performance

Year-end Grades

Although the small number of LR students (N=5) consistently had the lowest year-end mean for the combined core classes, combined elective classes and for the combined total of all grade eleven classes, one way analysis of variance found no significant differences between the groups (Table 35). Similarly, no significant differences were found for any of the individual core classes, including English 20, Social Studies History 20, Algebra 20, Geometry Trigonometry 20, Chemistry 20, Physics 20, Biology 20, and General Math 20. Of the thirty-one elective classes, a significant difference in the mean was found on one class, Physical Education 20 ($F(3,16) = 5.35$, $p < .010$). For a number of core classes and for the majority of elective classes there were inadequate numbers of students to allow a meaningful statistical comparison. However, as indicated in the analysis of year-end averages for the combined core, elective and total number of grade eleven classes, the performance of students in the AR, VR, and HR group was very similar (Table 35). Compared with grade nine and ten year-end averages, the difference between the academic performance of the remaining LR students and other grade eleven students had narrowed.

Analysis of within group differences, comparing the year-end grades of students who successfully completed grade eleven by June 30, 1991 with students who failed to reach this level of academic achievement, found that within each school readiness group, year-end averages for grades nine, ten and eleven were consistently higher for grade eleven successful students, as compared to students who did not complete grade eleven by June 30, 1991 (Table 46). The within group data on these specific variables supports the contention that the narrowing of performance differences between groups in the analysis of grade eleven year-end grades is attributable to a disproportionate loss of students in each of the readiness groups with the highest proportionate loss in the low readiness group

Table 35 **Means and ANOVA Results for Grade Eleven Year-End Grades: Core and Elective Classes**

Core Classes		Groups				Anova
		LR	*AR*	*VR*	*HR*	
English 20A	M	67.50	68.28	70.69	69.82	F (3, 70) = .18, p < .912
	SD	15.95	11.13	8.52	15.69	
	n	4.00	32.00	16.00	22.00	
English 20B	M	60.25	67.32	70.25	72.86	F (3, 68) = 1.14, p < .338
	SD	21.09	16.89	8.84	13.01	
	n	4.00	31.00	16.00	21.00	
Social Studies/History 20	M	52.60	68.19	72.00	65.11	F (3, 36) = .87, p < .466
	SD	33.40	19.94	13.12	24.29	
	n	5.00	16.00	8.00	11.00	
Algebra 20A	M	62.67	63.46	66.06	67.84	F (3, 62) = .19, p < .906
	SD	20.03	19.46	14.49	26.76	
	n	3.00	28.00	16.00	19.00	
Algebra 20B	M			77.00	61.00	
	SD					
	n			1.00	1.00	
Geo-Trig 20	M		65.93	76.10	80.36	F (3, 32) = 2.25, p < .121
	SD		21.30	10.14	18.14	
	n		15.00	10.00	11.00	
Chemistry 20	M	52.00	65.06	63.17	73.50	F (3, 38) = .91, p < .443
	SD		18.52	16.97	20.74	
	n	1.00	17.00	12.00	12.00	
Physics 20	M	54.00	72.89	75.50	76.00	F (3, 34) = .88, p < .462
	SD		13.10	9.86	16.24	
	n	1.00	18.00	8.00	11.00	
Biology 20	M	57.75	68.29	71.63	68.06	F (3, 62) = .98, p < .409
	SD	22.35	12.45	11.86	17.75	
	n	4.00	28.00	16.00	18.00	
General Math 20	M	65.00	53.00	44.00	76.00	F (3, 2) = .87, p < .575
	SD		15.72			
	n	1.00	3.00	1.00	1.00	
Core Average	M	62.00	65.74	69.82	68.41	F (3, 74) = .60, p < .620
	SD	14.37	13.70	8.75	17.64	
	n	5.00	34.00	17.00	22.00	
Elective Average	M	67.00	72.29	74.77	74.68	F (3, 74) = .68, p < .567
	SD	19.18	12.05	11.45	11.69	
	n	5.00	34.00	17.00	22.00	
Overall Average	M	62.60	68.06	71.53	70.82	F (3, 74) = .88, p < .458
	SD	15.06	12.33	8.41	14.70	
	n	5.00	34.00	17.00	22.00	

With the objective of providing an overview of students' high school performance up to June 30, 1991, one way analysis of variance found a significant difference in the mean number of high school classes taken ($F(3,99) = 11.46$, $p < .000$). Fewest classes were taken by LR students, the greatest number by those in the HR group (Table 36). Relative to the total number of classes taken a significant difference was found in the percentage of failed classes ($F(3,100) = 5.34$, $p .002$), percentage of repeated classes ($F(3, 100) = 3.36$, $p < .022$) and percentage of modified classes ($F(3, 100) = 13.72$, $p < .000$). In all three categories the highest percentage was in the LR group. The most significant difference was in the

percentage of modified classes. Twenty-eight percent of the high school classes taken by LR students were modified classes, as compared to approximately four, seven and two percent respectively for students in the AR, VR and HR groups.

Table 36 **Number of High School Classes Taken up to June 30, 1991: Percent of Classes Failed, Repeated and Modified**

		Groups			
		LR	*AR*	*VR*	*HR*
Number of Classes Taken	M	20.95	28.38	27.52	30.74
	SD	3.24	4.52	6.74	3.03
	n	19.00	40.00	21.00	23.00
Percentage of Classes:	Failed	22.79	10.10	8.81	7.39
	Repeated	5.63	3.56	1.14	2.13
	Modified	27.95	4.24	6.86	1.57

3.2.4 Canadian Test of Basic Skills: Level 16 Form 5

One way analysis of variance found a significant difference in the mean percentile scores on all subscales of the CTBS: Level 16 Form 5 which was administered in grade ten. Students in the LR group consistently received much lower scores than students in the other three readiness groups. HR students consistently received the highest scores, followed by VR students and at a lower percentile, AR students (Table 37).

Table 37 **Means and ANOVA Results on the Canadian Test of Basic Skills: Level 16 Form 5**

Scale		Group				Anova
		LR	*AR*	*VR*	*HR*	
Reading Comprehension	M	19.67	47.65	61.11	65.05	$F(3,87) = 9.56, p < .000$
	SD	20.13	27.83	28.43	28.56	
	n	15.00	37.00	18.00	21.00	
Mathematics	M	14.40	47.92	56.11	73.52	$F(3,87) = 15.32, p < .000$
	SD	11.50	25.94	33.79	26.54	
	n	15.00	37.00	18.00	21.00	
Written Expression	M	18.67	51.24	62.00	67.36	$F(3,88) = 13.15, p < .000$
	SD	15.04	23.96	25.87	28.95	
	n	15.00	37.00	18.00	22.00	
Sources of Information	M	20.60	48.00	62.56	70.32	$F(3,88) = 11.79, p < .000$
	SD	16.17	27.49	28.30	28.57	
	n	15.00	37.00	18.00	22.00	
Comprehension	M	15.53	48.38	62.33	71.67	$F(3,87) = 15.68, p < .000$
	SD	14.10	25.80	28.98	27.59	
	n	15.00	37.00	18.00	21.00	
Applied Proficiency	M	27.13	38.97	41.00	44.10	$F(3,87) = 14.24, p < .000$
	SD	7.14	7.90	8.25	8.24	
	n	15.00	37.00	18.00	21.00	

Note: The CTBS is a Canadian adaptation of the Iowa Tests of Basic Skills (Mitchell, 1985, p. 260).

3.2.5 Interviews with Students: 1991

Personal interviews with each of the available participants (N =101) in the Class of '79 project took place in May and June of 1991. One student who had dropped out of school before the end of the

1990/91 school year was located and interviewed in September of 1991. The interviews updated biographical information about students and their families and addressed a number of school-related issues. At the end of each interview participants were asked to complete the Coopersmith Self-Esteem Inventory (Coopersmith, 1981). For the purpose of this section of the paper student answers to questions about schooling focused on the issues reported from the 1988 interviews. Responses to the other questions will be reported in a subsequent paper.

3.2.6 At Time of Phase Two Interviews

Age of Participants

Even though all but one student was either age sixteen or seventeen at the time of the Phase Two interviews, one way analysis of variance indicated there was a significant different in the mean age between the groups ($F, (3,97) = 8.61, p < .000$). Students in the HR group were oldest, those in the LR and AR groups the youngest (Table 38).

Table 38 **Age and Living Arrangements of Participants and Employment Status of Parents at Time of Phase Two Interviews in 1991**

		Group			
		LR	*AR*	*VR*	*HR*
Participants' Age (years)	M	16.29	16.30	16.71	16.83
	SD	0.47	0.46	0.56	0.39
	n	17.00	40.00	21.00	23.00
Living Arrangements:					
Both Birth Parents		12	32	16	18
Mother Only		4	3	3	1
Father Only			2	1	
Birth Parent/Step Parent			2	1	2
Relatives					
Other		1	1		1
Father's Employment Status:					
Employed		13	37	19	22
Retired		1			
No Record		3	22	2	1
Mother's Employment Status:					
Employed		12	29	18	22
Homemaker		4	7	2	
Student			2		
Unemployed		1			
No Record			2	1	1

Living Arrangements of Participants

The majority of students (77.2%) were living with their birth parents, approximately fourteen percent with either their birth mother (10.9%) or birth father (3.0%) in a single parent household (Table 38). No significant difference was found in the distribution of students across the living arrangement categories ($\chi^2 (15, N = 101) = 12.33, p < .654$).

Employment Status of Mothers and Fathers.

Over 80 percent of mothers and ninety percent of fathers were employed outside the home (Table 38). Neither the distribution of mothers (χ^2 (12, N = 101) = 15.38, p < .221) nor fathers (χ^2 (6, N = 99) = 7.94, p < .242) across the employment status categories was significantly different.

Occupational Status of Mothers and Fathers

Chi square analysis of the occupational status of participants' parents, employing nineteen occupational categories (Blishen, 1967), found a significant difference for fathers (χ^2 (39, N = 99) = 54.30, p < .053) and a non-significant (but approaching statistical significance) difference for mothers (χ^2 (36, N = 101) = 49.04, p < .072). Parents of LR students were proportionately more frequently employed in occupations designated as semi-skilled or unskilled and less frequently working in higher level occupations. Within the other three readiness groups there was a more even distribution across the range of occupations (Table 39).

Table 39 **Occupational Status of the Parents of Participants in 1991**

Occupation	Fathers				Mothers			
	LR	*AR*	*VR*	*HR*	*LR*	*AR*	*VR*	*HR*
Self-employed Professional			2					
Employed Professional	1	7	2	4		1		3
High Level Management				1				
Semi-Professional						3	1	3
Technician				2		2		
Middle Management	3	9	5	5		2	1	
Supervisor		1		1			1	
Foreman			1					
Skilled Clerical-Sales-Service	1	4		2	1	11	6	6
Skilled Crafts and Trades		10	5	1				
Farmer	1	1					1	
Semi-skilled Clerical-Sales-Service	1	3		3	7	8	7	6
Semi-skilled Manual	5	2	4	1	2	2		1
Unskilled Clerical-Sales-Service	1				2		1	
Labourer								
Farm Labourer								
Unemployed					1			
Out of Labour Force					4	9	2	
Unknown	3	3	2	2		2	1	1

Question: Do you expect to complete high school?

Ninety-one percent of those interviewed in 1991 were unequivocal about completing high school (Table 40). Chi square analysis found no significant difference in expectations across the groups (χ^2 (6, N = 101) = 8.98, p < .175).

Table 40 **Expectations About Completing High School**

Response	Group (n)			
	LR	*AR*	*VR*	*HR*
Yes - Definitely	13	37	19	23
Yes - Probably	3	1	1	
Don't Know	1	2	1	

Question: Do you plan to continue your education after high school?

Sixty-two percent of participants stated without any indication of uncertainty that they planned to continue their education after completing high school (Table 41). Although a lower percentage of students in the LR and AR group were unequivocal about their plans to pursue post-secondary education or training, the difference in responses between the groups was not statistically significant (χ^2 (12, N = 101) = 16.00, p < .191). When asked to elaborate about their intentions, LR students were least likely to say university was a goal but more likely to specify a technical school or community college. Aspirations for a university degree were most frequently expressed by HR students (69.6%).

Table 41 **Plans for Pursuing Post-secondary Education**

	Group			
	LR	*AR*	*VR*	*HR*
Response:				
Yes - Definitely	8	23	15	17
Yes - Probably	5	3	2	3
No - Definitely Not	1	1		
Don't Know	3	13	4	3
Institution:				
University-unspecified discipline		2	1	2
University-specified discipline	3	8	5	10
University-professional degree	1	7	5	4
Technical Institute	6	11	5	4
Community College	4	1	2	
Cosmetology School	1			1
Other		1		
No Plans to Continue	1	5	2	1
Undecided	1	4	1	1

3.2.7 Coopersmith Self-esteem Inventory: School Form

One way analysis of variance of mean scores on the 58 item School form of the Coopersmith Self-esteem Inventory (1981) found no significant difference either on the Total score (F (3,97) = .59, p = .619) or any of the subscale scores, including the Lie scale (Table 42). Although HR students had the highest

scores, indicative of positive self-esteem, the mean scores for all groups were at the upper end of normative data for the School form (Coopersmith, 1981). More then one-half of the students in each group scored in the highest quartile. Only one student scored in the lowest quartile and only 9 out of 101 students scored below the 50th percentile.

Mean scores on the Lie scale of the Coopersmith Inventory were consistent with normative data, suggesting a non-defensive response to the questions (Coopersmith, 1981), with HR students scoring lowest (least defensive).

Table 42 **Means and ANOVA Results on the Coopersmith Self-esteem Inventory: School Form**

Scales		Group				Anova
		LR	*AR*	*VR*	*HR*	
General Self	M	20.24	19.85	20.14	21.44	F (3, 97) = 0.69, p < .563
	SD	4.16	4.77	4.60	3.12	
	n	17.00	40.00	21.00	23.00	
Social Self	M	7.00	6.88	6.76	7.17	F (3, 97) = 0.35, p < .792
	SD	1.17	1.73	1.41	1.03	
	n	17.00	40.00	21.00	23.00	
Home Parents	M	5.53	5.83	6.14	6.26	F (3, 97) = 0.37, p < .772
	SD	2.65	2.73	2.13	1.91	
	n	17.00	40.00	21.00	23.00	
School Academic	M	4.12	4.30	4.05	4.61	F (3, 97) = 0.29, p < .831
	SD	2.21	2.14	2.42	1.88	
	n	17.00	40.00	21.00	23.00	
Total	M	73.77	73.70	74.19	79.13	F (3, 97) = 0.60, p < .619
	SD	16.95	18.13	18.28	11.71	
	n	17.00	40.00	21.00	23.00	
Lie	M	2.59	2.28	2.29	1.70	F (3, 97) = 1.66, p < .181
	SD	1.50	1.13	1.59	1.26	
	n	17.00	40.00	21.00	23.00	

Note: Total Scores = sum of subscales x 2 (Coopersmith, 1981)

3.2.8 Special Service Reports on File: 1988-1991

After completion of the interviews at the end of the school year on June 30, 1991 the researcher read all the information in each student's cumulative file for high school. The primary objective was to document any evidence of referrals for special services, including psychological testing, assessment of suspected hearing, speech and visual problems, medical referrals, and details of special programming for both delayed and advanced students. For the majority of students the files covered the high school years from September 1, 1988 to June 30, 1991. The files of students who entered high school at a later date, such as in 1989 or 1990, contained information covering a shorter time span, but not necessarily less information.

Evidence of referrals for special services and details of special programs was infrequent. A total of 41 reports or other indicators of special services were found in the cumulative files of the total sample (Table 43). Over one-half (53.7%) of the reports were in the files of the LR students. Only one student in the HR group had a special service report on file. The majority of reports were about services for students experiencing academic difficulties.

Table 43 **Number of Special Service Reports in Students' Cumulative High School Files: September 1988 - June 1991**

Special Service Report	Group			
	LR	*AR*	*VR*	*HR*
Psychological Assessment	1	1		
Remedial/Resource Referral	6	2	1	
Disciplinary - School	2	2		
Referral for Upgrading Service	5	2	1	
Report on Upgrading Service	5	2	1	
Referral to Social Services	3	1	1	1
Conflict with the Law	2	1	1	

Despite the relative paucity of special service reports in students' cumulative high school files the combined total of all reports, for both elementary and high school, provided a wealth of detailed information about the school division's efforts to meet the special needs of students, especially at-risk students. The preponderance of reports were found in the files of LR students. Tabulation of the frequency of all reports for each student in the LR group, in relation to their level of academic achievement as of June 30, 1991, provided a quantifiable indication of the kinds of services directed to particular individuals, and to members of the group as a whole (Table 44).

Three students in the LR group who successfully completed grade eleven by June 30, 1991, the expected completion date for students who progressed through the various grades without interruption, did not have any psychological, special education review, resource service, extended readiness, or learning assistance reports in their files during the elementary school years. One of the three had a psychological report in the high school file. In contrast, the files of all other LR students contained multiple reports of special services and or referrals for psychological assessment, predominantly describing special services received in elementary school.

Special service reports provide detailed accounts of the results of assessment, details of the content and duration of special programming and details of student progress in the various programs. However, no attempt was made to quantify or otherwise substantiate the amount of school resources expended in the delivery of these services.

Table 44 **Number of Progress and Special Service Reports in the Files of LR Students Between 1979 and 1991**

Grade completed by June 30, 1991	LR Student	Elementary school 1979-1988									High school 1988-1991 Special service Report
		Psyc. assessment	*Speech/ hearing assessment*	*Reading progress report*	*Academic progress report*	*Special education report*	*Resource service report*	*Extended readiness report*	*Learning assistance program*	*Total*	
Gr. 11	No. 1		2	6						8	1
	2			4	1					5	
	3		1	5	3					9	
Gr. 10, Pt.11	4	2	1	7	4		1			15	
	5	3		1						4	
Gr. 10	6	5	5	14	6		6	1		37	
	7	2		6	2			1		11	
	8	2		5			1	1		9	
	9	2		3		6	2			13	
Gr. 9, Pt.10	10	2	1	2	4		2			11	
	11	1	2	1						4	
	12	2	2	8	9	1	2			24	1
	13	2	1	7		1				11	
	14	5		7			4			16	
Gr. 9	15	2		7			5	1		15	
Gr. 8, Pt.9	16	4		7	1	1	1			14	4
	17	5	2	5		4	3			19	3
	18	4	1	4	1	8		1		19	2
<Gr. 8	19	3	1		1	5	2		2	14	3
No Record	20	2	2	7	2			1		14	Unknown
	21	2		5			4			11	Unknown
	22	2		1		4			2		Unknown
	23										Unknown
	24										Unknown
	25										Unknown
	26										Unknown

3.2.9 Within Group Comparisons: Grade 11 < Grade 11

As a complement to the between group comparison of the four school readiness groups, the researcher examined within group similarities and differences by comparing students who had successfully completed grade eleven (Grade 11) by June 30, 1991 with students who had not completed grade eleven (< Grade 11) by the designated date. Amongst those who remained in the sample, fifty-four were in the Grade 11 group, forty-nine in the < Grade 11 group. Only selected portions of the within-group analysis will be considered in this paper. Of particular interest are some of the variables which yielded statistical differences, or those approaching significant differences, in the between group comparisons. These included age at school entry, gender, number of children in the family, birth order or place in the family, year-end averages in grades nine, ten and eleven, and scores on the Metropolitan Readiness test, administered at the end of the Kindergarten year in 1980.

3.2.10 Within Group Comparison of Biographical Data

Age at School Entry.

Across the total sample, age at school entry was not significantly different for those who successfully completed grade eleven by June 30, 1991 and those who had not (Table 45). Statistically, no significant differences were found within each of the readiness groups, however, within the LR group the difference approached significance ($p < .054$) with the small number ($n=3$) of grade eleven successful students (Grade 11) being younger at school entry than those who failed to complete grade eleven requirements (< Grade 11) by June 30, 1991. Consistent with the between group comparison of readiness groups LR students within each group, on average were the youngest, HR students within each group the oldest.

Gender

Although fewer female students, relative to male students, had failed to complete grade eleven by June 30, 1991, the difference across the total sample was not statistically significant (Table 45). The analysis within readiness groups revealed a difference in the VR group which approached significance ($p = .061$), with a larger number of males in the < Grade 11 group. As found in the between group comparison of readiness groups in the initial sample ($N = 129$) the LR group, proportionately, had the largest number of male students as compared to female students.

Number of Children in Family

No significant difference in the number of children in the family was found in the Grade 11 < Grade 11 comparison (Table 45). Within readiness groups, however, LR students who failed to complete grade eleven by June 30, 1991 came from families with significantly larger number of children. Across all groups the smallest number of children in the family was found in the LR group (n=3) who successfully completed grade 11 by the designated date. The latter finding, albeit based on limited numbers, is notable given the results of the between group analysis which showed LR students, on average, coming from families with the largest number of children.

Place in the Family

Across the total sample no difference was found between Grade 11 versus < Grade 11 students based on birth order or place in the family (Table 45). The analysis within each readiness group, however, revealed that LR students who failed to complete grade eleven by June 30, 1991 were later born than students in any other group and significantly ($p < .000$) later born than students in the LR group who completed grade eleven. In fact, all three students in the latter group were born first.

3.2.11 Within Group Comparison of Academic Performance

As documented, significant differences in performance between the readiness groups were found on an array of academic and standardized tests in elementary and secondary school. To explore within group differences, this section of the paper will report on year-end average grades for grades 9, 10 and 11, comparing the performance of those who successfully completed grade eleven by June 30, 1991, with those who did not attain this level of academic performance.

Grade Nine: Year-end Average

Comparing the total sample, the grade nine average of students who had successfully completed grade eleven requirements by June 30, 1991 was significantly higher ($p < .000$) than for students in the < Grade 11 group. This pattern of results was consistent in each readiness group with all comparisons revealing significant differences (Table 46).

Grade Ten: year-end Average

Similar to the results recorded for grade nine, year-end averages for students who had successfully completed grade eleven by June 30, 1991 was significantly higher than for those students who had not

completed grade eleven requirements (Table 46). Identical results were found in each readiness group (Table 46).

Grade Eleven: Year-end Average

As found in grades nine and ten, year-end averages for students in grade eleven who had completed grade eleven by June 30, 1991 were significantly higher than the averages of students who had made less academic progress (Table 46). This result was true for the total sample and for each of the within group comparisons. T-test results are not reported for the LR group because of the limitations of the data, nevertheless, the direction of the available data was consistent within the outcome for all readiness groups. Grade eleven averages were calculated for the two students in the < Grade 11 LR group because they had taken sufficient numbers of grade eleven classes to justify the calculation of year-end averages.

The between group and within group statistics reported for these particular measures of academic performance reveal a highly consistent pattern of results over time.

3.2.12 Within Group Comparison on the Metropolitan Readiness Test

Pre-reading composite stanine scores on the MRT II for students who had successfully completed grade eleven by June 30, 1991 were significantly higher ($p < .000$) than for students who had not attained this level of academic achievement (Table 47). The within group analysis revealed a consistency across all readiness groups, however, statistically significant differences were found on only two of the four groups. Albeit based on limited numbers, the most notable difference was within the LR group ($p < .000$). The difference within the AR group also reached statistical significance ($p < .029$). Overall, the within group data on the MRT II confirmed the relationship between school readiness and performance. However, the success of the three LR students who completed grade eleven by June 30, 1991, as contrasted with the failure of students in the other readiness groups to achieve this end, suggests that the relationship between age, readiness and ultimate success in school is not a simple one.

Table 45 **Means and T-test/χ^2 Results for Within Group Analysis of Biographical Data for Grade 11 <Grade 11 Comparison**

		Total Sample	Groups			
			LR	*AR*	*VR*	*HR*
Age at school entry						
Grade 11	M	61.89	58.33	61.14	62.50	63.13
	SD	3.46	0.58	3.72	3.59	2.62
	n	54.00	3.00	22.00	14.00	15.00
< Grade 11	M	61.67	60.31	61.06	63.86	63.88
	SD	3.91	3.59	3.37	3.34	4.97
	n	49.00	16.00	18.00	7.00	8.00
	t	0.30	-2.07	0.07	-0.83	-0.39
	p	0.767	0.054	0.943	0.407	0.703
Total number of children in the family						
Grade 11	M	2.54	2.00	2.45	3.00	2.33
	SD	1.08	0.00	0.86	1.62	0.72
	n	54.00	3.00	22.00	14.00	15.00
< Grade 11	M	2.76	3.19	2.28	2.86	2.88
	SD	0.99	1.11	0.75	0.69	1.13
	n	49.00	16.00	18.00	7.00	8.00
	t	-1.07	-4.28	0.68	-0.28	-1.41
	p	0.289	0.001	0.498	0.780	0.174
Place in the family						
Grade 11	M	1.83	1.00	1.91	2.07	1.67
	SD	1.19	0.00	0.97	1.86	0.72
	n	54.00	3.00	22.00	14.00	15.00
< Grade 11	M	2.00	2.44	1.67	1.71	2.14
	SD	1.07	1.26	0.91	0.76	1.07
	n	48.00	16.00	18.00	7.00	7.00
	t	-0.74	-4.55	0.81	-0.62	-1.24
	p	0.462	0.00	0.424	0.541	0.231
Gender		n	n	n	n	n
Grade 11	Male	26	3	8	6	9
	Female	28	0	14	8	6
<Grade 11	Male	29	10	9	6	4
	Female	20	6	9	1	4
	χ^2	1.257	1.644	0.753	3.500	0.212
	p	0.262	0.120	0.385	0.061	0.645

Table 46 **Means and T-test Results for Within Group Analysis of Year-End Averages for Grades 9, 10 and 11 in the Grade 11 <Grade 11 Comparison**

		Total Sample	Groups			
			LR	*AR*	*VR*	*HR*
Grade 9						
Grade 11	M	77.06	70.00	74.77	77.71	81.20
	SD	8.29	10.54	8.75	4.51	8.55
	n	54.00	3.00	22.00	14.00	15.00
< Grade 11	M	58.39	53.85	61.11	54.71	62.88
	SD	8.88	12.03	5.95	6.29	6.71
	n	46.00	16.00	18.00	7.00	8.00
	t	10.86	2.13	5.64	9.66	5.24
	p	0.000	0.051	0.000	0.000	0.000
Grade 10						
Grade 11	M	75.77	73.00	73.41	74.00	80.73
	SD	8.81	9.54	8.45	7.55	9.02
	n	54.00	3.00	22.00	14.00	15.00
< Grade 11	M	58.74	58.17	59.67	57.40	58.38
	SD	7.77	8.12	8.51	10.14	4.41
	n	43.00	12.00	18.00	5.00	8.00
	t	9.84	2.75	5.10	3.87	7.98
	p	0.000	0.017	0.000	0.001	0.000
Grade 11						
Grade 11	M	75.39	72.33	74.68	73.86	78.47
	SD	8.68	9.07	8.40	6.72	10.51
	n	54.00	3.00	22.00	14.00	15.00
< Grade 11	M	55.42	48.00	55.92	60.67	54.43
	SD	7.77	5.66	8.53	0.57	6.29
	n	24.00	2.00	12.00	3.00	7.00
	t	9.68		6.19	3.03	5.56
	p	0.000		0.000	0.008	0.000

Table 47 **Means and T-test Results for Within Group Analysis of MRTIIP Pre-Reading Composite Stanine Scores for the Grade 11 <Grade 11 Comparison**

	Total Sample	Groups			
		LR	*AR*	*VR*	*HR*
Grade 11					
M	5.65	3.00	5.18	5.14	7.33
SD	1.33	0.00	0.66	0.86	0.49
n	54.00	3.00	22.00	14.00	15.00
< Grade 11					
M	4.16	1.88	4.67	4.57	7.25
SD	2.04	0.81	0.77	1.40	0.46
n	49.00	16.00	18.00	7.00	8.00
t	4.33	5.58	2.28	1.16	0.40
p	0.000	0.000	0.029	0.259	0.696

4. Discussion

To reiterate, the primary goal of the Class of '79 project was to undertake a longitudinal investigation of the consequences and implications of variability in school readiness at the age of school entry. Phase One and Two of the project compared the performance of four school readiness groups from school entry in 1979 to the end of the school year in 1991. In answer to the question, "Did initial differences in readiness persist over time?", the data was unequivocal. Virtually on every measure of academic performance the relative positioning of participants prevailed. Although there were individual exceptions in each group, mean differences between the groups persisted from Kindergarten through grade eleven, even when loss of participants disproportionately affected the representativeness of students in the groups. On measure after measure, test after test, HR students achieved at the highest level. Across these same measures, the performance of students in the LR group was consistently below that of the other readiness groups. With one exception, as observed in the analysis of year-end grades for grade eleven, the performance of students in the AR and VR groups was essentially the same, positioned between the highs and lows of the HR and LR participants. In grade eleven, the year-end average grades for VR students were insignificantly higher than for HR students and the difference between all groups was insignificant (Table 35). One explanation for the convergence of means in the year-end grades for grade eleven was the disproportionate decline in the numbers of students in each readiness group. As contrasted with the original sample, the decline ranged from 80.8% for the LR group to 12% in the HR group, with a decline of 34.6% in both the AR and VR group.

Another indication of the persistence of readiness differences over time was found in the researcher's summary assessment of each student's academic performance between 1979 and 1988 (Table 17) and overview of high school performance up to June 30, 1991, as reflected in the number of classes taken, number of classes failed, number of classes repeated, and number of modified classes taken by each student (Table 36). In elementary school the majority of LR students experienced delayed advancement, being held back by one or more years. In contrast, none of the HR students experienced delayed advancement and the majority were judged to have had consistently high achievement throughout their elementary grades. In high school LR students failed a much higher percentage of their classes, repeated a higher percentage and were enrolled in a much higher percentage of modified

classes, than students in the other readiness groups. Again, in contrast, HR students had the lowest percentage of failed and modified classes, albeit more repeated classes than for the VR group. By June 30, 1991 HR students, on average, had taken the highest number of high school classes, LR students the lowest number.

As emphasized in the review of school readiness research, the majority of longitudinal studies which have examined the relationship between academic performance and school readiness have focused on students at-risk of early school failure, most frequently comparing the performance of those who have been developmentally placed or received alternative programming with equally unready students who have proceeded through traditional academic programs, without intervention (Dennebaum & Kulberg, 1994; Ferguson & Strieb, 1996; Matthews, 1996; Matthews, May, & Kundert, 1999; May & Kundert, 1997; Matthews, 1996; Shepard & Smith, 1989; Sternberg, 1991). Most studies have examined performance in the early elementary grades, however, a few studies have followed student progress from Kindergarten through high school. Including samples of not-at-risk students in the comparisons has been a research strategy employed in a number of studies. Almost without exception, the results from this diverse and extensive body of school readiness research has supported the conclusion that any improvement in the academic performance of at-risk students, as a result of developmental placement and alternative programming, has been limited to temporary gains. As a result, children who enter elementary school developmentally at-risk continue to perform below the level of not-at-risk students as they progress through school, despite alternative programming and interventions.

In contrast to the majority of studies reviewed, the Class of '79 project did not specifically set out to examine the impact of academic programming, whether traditional or alternative, but to compare the academic performance of students who entered school at different levels of readiness. Furthermore, unlike many other longitudinal investigations of school readiness, the objective was not to generally compare the performance of at-risk with non-at-risk students, but to make comparisons, in a more defined way, across the spectrum of school readiness. Regardless of the methodological differences between the Class of '79 project and other studies, the finding that initial differences in academic performance persisted from Kindergarten to grade eleven, was consistent with the consensus of results from a majority of empirical studies, which have concluded that developmental placement and other

alternative strategies for improving the performance of at-risk students, by and large, have not been proven to be effective in narrowing the gap in performance between those at-risk and not-at-risk.

Over the twelve years of schooling covered by Phase One and Two of the Class of '79 project, students considered to be at-risk of failure, in need of intervention and special services, were largely to be found in the LR group. As observed in the analysis of material found in each student's cumulative file, LR students were the most frequent recipients of an array of special services, especially in elementary school, and more frequently in the early years of elementary school. Although the Class of '79 project was not designed to assess the impact of developmental placement or other intervention strategies, the compiled record of special services provided by the school division attested to the division's commitment to address the special needs of students. The fact that the relative positioning of students in the four designated school readiness groups, on multiple measures of academic performance, remained constant over twelve years of schooling, raises important questions. Would the performance difference between the groups have been even greater, especially for students in the LR group who were recipients of a disproportionate percentage of special services, if such services were either not provided or provided less often? Alternatively, other researchers have suggested that developmental placement and modified programming for at-risk students can contribute to limiting the academic performance of such students (Eads, 1990; Ferguson, 1992; Ferguson & Strieb, 1996; Matthews, 1996; May & Kundert, 1997; Shepard & Smith, 1989; Shepard, 1989; Skrtic, 1991; Sternberg, 1991; Swadener & Lubeck, 1995). In the absence of comparable control groups, matched on the readiness status and other characteristics of individual students, in addition to comparability of important situational determinants, it is not possible to provide a definitive answer to either question, within the framework of the Class of '79 project. The problem of not knowing how students would have performed under different circumstances, under different academic arrangements, applies to students in all four readiness groups, not solely to those in the LR group. What can be said, nevertheless, is that within a particular school division, within a particular community, over a particular time, children who entered elementary school at different levels of individual readiness, maintained their relative position of academic performance over twelve years of schooling. As substantiated through analysis of available records, initial differences in academic readiness and performance, initial variability in school readiness, was not a temporary phenomenon.

In contrast to the marked differences between the readiness groups on multiple measures of academic performance, on an array of standardized achievement tests and on statistics about retention, modified programming and utilization of special services, differences on social indicators of adjustment were either insignificant or, when evident, of a lesser magnitude. As documented in the interviews with students in 1988 and 1991, at the end of grade eight and grade eleven for the majority of students, no difference was found between the groups in their expectations about completing high school. Regardless of significant differences in academic performance almost all students, 97.7% in 1988 and 96.1% in 1991, expressed confidence about successfully completing high school. Similarly, a majority of students, 77.5% in 1988 and 75.2% in 1991, said they planned to pursue post-secondary education. Although fewer LR students, 26.8% in 1988 and 23.5% in 1991, specifically referred to university education as an objective, a majority of those in the LR group indicated they planned to continue their education in post-secondary institutions.

On measures of self assessment, Coopersmith's self-esteem inventory completed by students in 1991 and the experimental self assessment scale completed in 1988, no significant differences were found on either total scores or subscale scores, even though differences on 6 of the 26 adjective pairs comprising the experimental scale were statistically significant. With rare exception, scores on these measures were consistent with a positive self assessment, positive self esteem, across the four readiness groups. Differences were differences of degree, rather than kind. The majority of students in the Class of '79 project expressed assurance about successfully completing high school, had plans to pursue post-secondary education, and indicated they were positive about themselves. The optimistic expectations suggested by these findings were somewhat muted for students who experienced academic difficulties and failures, but nonetheless positive. Twelve years of disparity in academic performance across the readiness groups was not reflected, at least to any significant degree, in these particular social indicators.

The extended longitudinal school readiness studies of Matthews (1996) and Sternberg (1991), which also followed the academic progress of students from school entry in Kindergarten through high school, are not directly comparable to results from the Class of '79 project because of important methodological differences. Most important, the primary objective of the two American studies was to assess the impact of school entry transitional programs for students deemed to be at-risk of school

failure. Assessing the impact of academic programming was not the goal of the Class of '79 project. A second important difference between these three studies were notable differences in the characteristics of the target populations. Matthews (1996) compared three groups of at-risk students and a matched control group of not-at-risk students. Sternberg (1991) directed his attention to two groups of at-risk students, one group which participated in a two year transition program, the other group which remained in the conventional program. Although the designations at-risk and not-at-risk could be used to describe participants in the Class of '79 project, the categories of school readiness employed in the study are not directly comparable to the groups investigated by Matthews and Sternberg. Methodological differences aside, longitudinal investigation of school entry variability in readiness is the connecting link between these three studies, especially in the tracking of the academic performance of students deemed to at at-risk, but also in the comparison with not-at-risk students.

Matthews (1996) and Sternberg (1991) were unequivocal in their conclusion that the transitional programs which they investigated did not improve academic performance of at-risk students, neither in elementary school nor secondary school. The Class of '79 project found that the academic performance of LR students, relative to students who entered school at higher levels of school readiness, remained positionally constant. Over twelve years of schooling, LR students consistently performed below the level of students in the other three readiness groups. Matthews' (1996) not-at-risk control group also performed at a higher level on most measures of academic performance and achievement, as compared to at-risk groups, when the statistical analysis did not control for aptitude differences between the groups. Similar to the results found in the Class of '79 project, differences between at-risk and not-at-risk students became less pronounced and on some measures insignificant as students advanced through high school. The convergence of results occurred as sample sizes, most notably in at-risk groups, were significantly reduced.

In all three longitudinal studies, students deemed to be at-risk were more frequent recipients of special education services, both as compared to at-risk students who qualified for but did not participate in transitional programs and, especially as compared to students in not-at-risk groups. It was during the elementary school years, in particular the early years, that at-risk students were most frequently referred to and participated in special programs. Given the longstanding emphasis on early childhood intervention

(Reynolds & Temple, 1998) finding consistent evidence of higher referrals to special education services in early elementary grades for at-risk students, was not unexpected. On the important question of whether such referrals and placements narrowed the gap in academic performance between at-risk and not-at-risk students, the results from all three studies were not encouraging. Sternberg (1991) and Matthews (1996) concluded that at-risk students who remained in conventional programming, not only received fewer special services, but over the long term performed as well, or better, than those who received such services. The Class of '79 project confirmed the significantly higher level of special services directed to the at-risk students but also found that the relative performance differences across the readiness groups persisted over twelve years of schooling. Hence, whatever differences special services had made did not alter the relative position of students on measures of academic performance.

Dropout rates were consistently higher for at-risk students, more so for students who were placed in transitional programs as contrasted to conventional academic programs, and higher for at-risk versus not-at-risk students. Retention rates were consistently higher for at-risk students, as compared to not-at-risk students, in all three investigations. However, in the Matthews (1996) study, retention was most frequent for students in the not placed at-risk group, whereas Sternberg (1991) found the highest retention rates amongst students who had been placed in the transition program. The latter students were also more frequently tracked into lower levels in junior high school, as compared to at-risk students who had remained in the conventional academic program (Sternberg, 1991).

A distinguishing feature of the methodology employed in the Class of '79 project was the comparison of readiness status across a wider spectrum of school readiness than found in most studies. Previous studies which have compared the academic performance of low ready (at-risk) students with not-at-risk students have, with rare exception (Biemiller, 1983), had a generic approach to defining and selecting not-at-risk samples (Ferguson & Strieb, 1996; Matthews, 1996; May & Kundert, 1997, Shepard & Smith, 1989). Common practice has been to draw not-at-risk samples of research participants from amongst those who fail to qualify for the designation of being at-risk.

On virtually every comparative measure, from 1979 to 1991, the two groups of students in the Class of '79 sample who tested in the mid-range of school readiness, had essentially similar scores, consistently scoring lower than students in the HR group and consistently higher than those in the LR group.

Significant variability on subscale scores of the MRT II, the criteria determining placement in the VR group, rather than the AR group, did not alter the relative performance of students in these two groups. The only exception to this pattern of results was a moderation of the differences found between the four readiness groups in grade ten and, especially in grade eleven, as the numbers of students disproportionately declined in the sample. (With the largest proportional decline in the low readiness group).

The analysis of biographical data and available information about various aspects of each student's school experience suggested a number of factors which could have affected school readiness status and academic progress. Given the methodology of the project it was not the intent of the researcher to control for potential determinants of influence but rather to document, as objectively as possible, trajectories of development for children who entered school at different levels of school readiness. Recording similarities and differences in students' characteristics, background and school experience was a component of this process.

Students designated as LR, on average, were the youngest students at the time of school entry in the fall of 1979. Compared to students in the other readiness group, they were more frequently male, more frequently from larger families, more frequently later born, and more frequently from families with lower occupational skills. In school, LR students were more frequently enrolled in split classes in the early elementary grades (K-2), and more frequently changed schools, especially during their years in elementary school, but also in high school. As of June 30, 1991, LR students had taken fewer high school classes but had enrolled in the highest number of modified classes, had repeated more classes and had failed more classes, than students in the other three readiness groups. Regarding referrals to and utilization of special services, LR students were most frequently referred for psychological assessment, and when assessed, tested at a younger age, most frequently in grade one and Kindergarten. Referrals for speech/hearing assessments were also most frequent for students in the LR group. Similarly, special service reports, describing placement and progress in special programs, were most frequently found in the cumulative files of LR students.

In comparison with students in the other readiness groups, HR students were the oldest at the time of school entry and more frequently had parents with higher occupational skills. Similar to the LR group,

males outnumbered females in the HR group. Throughout elementary and high school, HR students changed schools less often than other students and by June 30, 1991 had taken the largest number of high school classes, failed the fewest classes and had enrolled in the fewest modified classes. Students in the HR group also had fewest referrals for psychological assessment, fewest referrals for speech hearing assessment, and had the fewest special service reports in their cumulative files.

The important finding that students in the LR group were the youngest at the time of school entry is consistent with Gredler's (1992) review of studies which have demonstrated a connection between age and child's readiness status. Age may well have been a significant factor contributing to the LR designation of students in the Class of '79 project. The same might be said for the observation that males made up over sixty percent of the LR group. Many previous studies (May & Kundert, 1997) have also reported overrepresentation of males amongst children deemed to be at-risk of school failure. Similarly, the finding that LR students came from families with lower occupational skills is consistent with previous research (Ferguson, 1992; Reynolds & Temple, 1998) which has reported a connection between readiness status and socio-economic status. Acknowledging the potential impact of age, gender and socio-economic background on a child's readiness status at the time of school entry does not, however, explain why initial differences in school readiness and academic performance persisted over twelve years of schooling, not just for students in the LR group, but for students in all four readiness groups.

The challenge of accounting for these findings is further complicated by some of the apparent inconsistencies noted in the selective within group comparisons reported in the results section. For example, compared to those LR students who failed to complete grade eleven by June 30, 1991 the small group of LR students who were successful, were younger at age of school entry, came from families with fewer children, were first born rather than later born and were all males. Furthermore, even though the three grade eleven successful LR students scored higher on the Metropolitan Readiness Test than LR students who failed to complete grade eleven by June 30, 1991, their readiness scores were significantly lower than students in the AR, VR and HR groups, who did not complete grade eleven by the designated date. These findings, albeit based on a very small sample of LR grade eleven successful students, raise cautionary questions about the predictive validity and legal advisability of using

biographical data about students and their families, in conjunction with school readiness data, when making judgements about such issues as delayed school entry, retention, extra year transition placements, and other intervention strategies.

Advising caution in looking for "quick-fix" solutions, such as raising the age for school entry to reduce the number of children who begin Kindergarten at low levels of school readiness, placing them at-risk for subsequent failure, has been a concern expressed by many educators and researchers (Ferguson, Jimerson & Dalton, 2001; Ferguson & Strieb, 1996; Gredler, 1997a, 1997b; May & Kundert, 1997; Matthews, May & Kundert, 1999; Ross, Smith, Slavin & Madden, 1997; Shepard, 1997; Tanner & Galis, 1997; Wallingford & Prout, 2000) in North America, within the past five years. In a recent study examining the relationship between season of birth and special education referral, for example, Wallingford and Prout (2000) concluded that evidence of over-referral of later birthdate students in the primary grades is cause for concern. They recommended that fuller consideration of "innovative and efficient strategies for meeting the needs of at-risk later birthdate students" (p. 387) would be preferable to special education referrals as a way of addressing problems faced by these students in primary classes.

Longitudinal examination of within-group factors associated with academic and behavioral outcomes of retained students, as recently reported by Ferguson, Jimerson and Dalton (2001), led to the following conclusions:

> Results of within group analyses in this study illustrate that older retained students who demonstrated early personal-social deficits were especially disadvantaged by retention. Similar findings were revealed for retained students who belonged to families with a low level of maternal education, socioeconomic status or parental value of education in terms of their family characteristics. Early demographic and social factors appear to pre-dict subsequent GPA performance of retained students better than early readiness scores, yet both set of factors appear equally predictive of subsequent achievement outcomes (p. 338).

4.1 Theoretical Considerations

Theorists and educators representing diverse developmental perspectives could undoubtedly find evidence within the Class of '79 data to account for some of the initial variance in school readiness in

this particular population of children. However, accounting for the pervasiveness of these initial differences over twelve years of schooling presents a particular challenge given the multitude of potential influences.

From a biological determinist perspective, it might be argued that the initial differences in school readiness represented differences of a more fundamental kind, that is, differences in innate potential. From this perspective, initial differences in performance, as reflected in readiness scores, could be sustained over the longer term within an education system which was committed to and had the resources to accommodate individual differences in readiness and performance. The underlying assumption might be that success in providing special services and programming, especially for at-risk students but also to others with special needs, would limit further widening of the performance gap between the students as they moved through the system. In other words, failure to address individual differences in readiness and potential could have resulted in even greater performance disparity between the four groups.

From a maturationist perspective, it might be argued that the school division's policy of providing a transitional year in the early years of schooling, together with special services and programs for students experiencing academic difficulties, should have narrowed the performance difference between students as they advanced through elementary and secondary school. As indicated by the comparative data, however, the expected convergence in performance as a result of maturation and supportive services did not occur. If initial differences in school readiness were primarily a consequence of differences in maturation, neither the transitional year placements nor resource interventions appeared to narrow the performance gap.

From a social constructionist perspective, as described by Richardson et al. (1989), the pervasiveness of performance differences across the readiness groups could be attributed to interactions between the characteristics of individual students and their families and the particular educational services, both conventional and special programs, which were made available to students in this particular school division. Within this framework, the influence of variability in school readiness, in maturation, in academic aptitude and performance cannot be adequately understood without examining the complex interaction of an array of forces. For example, the trajectory of academic performance of the child who

enters elementary school at either a lower or higher level of readiness than other children, is influenced by the child's response to their readiness status and experience, to the parent's response to child's performance and by the responses of teachers, resource personnel and school administrators as mediated through the policies and practices of the school division.

From an ecological perspective (Bronfenbrenner, 1977, 1986, 1993; Bronfenbrenner & Ceci, 1994) influences operative within institutional structures and practices of the larger community (the ecosystem), together with the influences of cultural values, political ideologies, historical events, economic and social conditions (the macrosystem), also affect human development, including the trajectory of a child's development. Although the impact of forces within the ecosystem and macrosystem are sometimes less obvious or direct than the impact of characteristics of the child, family and school, such influences can facilitate or impede individual and collective development. The debilitating consequences of chronic conditions of poverty, as well documented, are neither subtle nor indirect. However, such factors as prevailing beliefs about intelligence, about the presumed connection between intellect, success and failure, are also sources of potential influence, which can impact on how children see themselves and how others, especially significant others, including parents, siblings, peers, and teachers, see and respond to them. Within this context, a child's readiness status at the age of school entry, can interact with prevailing beliefs to establish and maintain a particular trajectory of development; possibly with lifetime consequences.

Given the methodology of the Class of '79 project, it is not possible to unequivocally determine why performance differences across the readiness groups persisted over twelve years of schooling. Nevertheless, it is the contention of the researcher that contained within this extensive record of the academic performance of a broad cross-section of students in one particular community, there is evidence, albeit incomplete, which supports diverse theoretical explanations. Although the forces determining trajectories of development undoubtedly varied across and within the readiness groups, the available evidence supports a model of influence which acknowledges an array of contributing factors of cumulative significance over time. It is suggested that whatever the reasons for variability in school readiness at the age of school entry, whether innate biological differences, differences in the level of maturation, differences in pre-school family and community conditions, or a combination of such factors,

the way parents and the school respond to the child's level of readiness and the way the child reacts to his or her experience in school and in the family, contributes to establishing and maintaining a particular trajectory of achievement (Jimerson, Egeland & Teo, 1999). Despite variability in the elements which contribute to performance differences between individuals within a particular readiness group, the combined influences maintain differences across readiness groups and over time. From this perspective, significant deviation from a performance trajectory, initiated by readiness status, is the exception. Errors in assessing school readiness (Meisels, 1987; Shepard, 1997), exemplary interventions (Matthews, May & Kundert, 1999), and the occurrence of dramatic events in the child's personal, family and or community life, are examples of trajectory altering forces (Elder, 1998).

Within this framework it is suggested that the greater the variance in a child's school readiness from normative expectations, either above or below prevailing expectations, the greater the likelihood the child, parents and especially the school system, will respond in ways which reinforce the child's readiness status. The earlier such designation occurs, the greater the influence of the designation on the child's trajectory of performance. Those designated as LR or at-risk, are most likely to acquire such a designation very early in their school experience, initiating referrals for assessment and special placements. Children whose performance in early schooling exceeds expectations, who acquire the status of HR, typically experience the accolades and opportunities of such a designation. Those who are judged to be in the normative range of school readiness typically meet normative expectations in response to normative demands. Maintaining and reinforcing trajectories of performance commensurate with school readiness designations is most probable in school jurisdictions which have sufficient resources and pedagogic intent to attempt to address individual differences in performance.

The trajectory of a child's development, as reflected in academic performance, is thus strongly influenced by readiness status at the age of school entrance, especially if the designation is accurate and especially if the response of educators and parents is influenced and directed by the designation. If a child's experience in school, as mediated through teachers, peers and parents, also confirms a particular readiness and performance status, he or she is likely to perform in ways which reinforces that status. Over time, this experience will become internalized as a component of a child's identity. If academic performance and emphasis on academic success is a dominant value within the community, and if the

child's family, peers and school subscribe to this value, it is even more probable that readiness status at school entry will initiate trajectories of development which will maintain performance differences between students as they move through elementary and secondary school. To the extent that performance in school is a prerequisite to later opportunities, a child's readiness status at school entry will likely affect levels of achievement and performance in adulthood, and potentially throughout the life course.

Although data from the Class of '79 project does not provide definitive proof of the power of collaborative influences affecting academic performance, information contained in the compiled school record for 129 individuals is consistent with the hypothesized connection between readiness status at the age of school entry, and subsequent performance. Phase three of the study, yet to be initiated, will extend this longitudinal investigation into adulthood.

4.2 Limitations and Implications for Future Research

The methodology employed in the Class of '79 project, relying extensively on information contained in the students' cumulative school files, limited the researcher's ability to verify the accuracy of the data, including scores on the Metropolitan Readiness Test, which were the basis for assigning individuals to the four designated readiness groups. Although the MRT has been judged to be a more valid indicator of school readiness than other widely used instruments, assessments based on the MRT are also subject to error. In addition to relying on archival readiness data, which essentially precluded any opportunity for adequate verification, the researcher's acceptance of MRT II pre-reading composite scores as the basis for assigning readiness status, reinforced the bias of studying readiness as a characteristic of the child. Despite these limitations, the Class of '79 project has provided, and continues to provide, a unique opportunity to document and compare the academic progress of a diverse readiness population, during a time when the issue of school readiness has been a pivotal issue for educators, researchers, parents and legislators at the highest level of government, in jurisdictions throughout North America. Within one particular jurisdiction, the Class of '79 project provides a longitudinal investigation and record of a historical event.

Perhaps the most important but also most difficult issue which has emerged from this study, is the finding that performance differences between four designated readiness groups persisted over twelve years of schooling. Accounting for the persistence of these differences presents a challenge of both theoretical and practical importance.

The singular difference between the Class of '79 project and other longitudinal investigations of school readiness is the comparison of groups across a wider spectrum of readiness, as a characteristic of students. Given this fact and the limitations of the study, a simple recommendation for future research is to replicate the four group comparison, from HR to LR, but with a more complete and rigorous definition and determination of school readiness. One option would be to ascertain what have proven to be the most valid indicators of school readiness, to apply these criteria to a broad cross section of school populations in various jurisdictions, and to routinely and objectively , as unobtrusively as possible, follow the trajectory of students' academic and social development, for as long as possible, but most certainly through elementary and secondary schooling. Whether such an endeavour is feasible is not known, however, the reality that such a project would face endless obstacles is abundantly clear.

As suggested by many researchers and educators who have examined and debated school readiness issues, supporting research which more completely and more thoroughly examines the reasons, both internal and external, for the relative success of specific intervention programs, such as Success for All (SFA) developed by John Hopkins University (Ross, Smith, Slavin and Madden, 1997) might be the most productive use of resources to ensure future generations of children develop to their fullest potential.

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